PERSONAL AND SOCIAL CONDITIONS RELATED TO THE ACADEMIC SUCCESS OF SCHOLARSHIP ATHLETES

By

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This dissertation is dedicated to my daughters Andrea and Amber and to my friends Cheryl, Lu, Marci, Mary and Suzanne whose love and support helped me to complete this document.

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PERSONAL AND SOCIAL CONDITIONS RELATED TO THE ACADEMIC SUCCESS OF SCHOLARSHIP ATHLETES

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The purpose of this study was to examine the personal and social conditions described in Tinto's theoretical model of dropout prevention which are related to three defined measures of academic success--College GPA (CGPA), Mathematics and English GPA (MEGPA) and Percentage of Credits Passed (PCTCR). Male scholarship athletes (N=70) in the income-producing sports of football and basketball (hereinafter known as scholarship athletes) were used as the study subjects. Tinto's theoretical model suggests that personal and social conditions, as well as academic factors are important in preventing academic failure and thus achieving "academic success" in college as defined in this study. A review of the literature found that similar factors were important for the academic success of both traditional college students and scholarship athletes. The factors identified in the literature as being important in achieving academic success in both groups were race, high school GPA, SAT/ACT scores, socioeconomic status, goals and commitments, self-esteem, learning style and levels of support and community involvement.

Two valid and reliable instruments, the Myers-Briggs Type Indicator (MBTI) and the Non-Cognitive Questionnaire (NCQ) were administered to study subjects to obtain information on the identified personal and social factors. University records were used to obtain academic information. Analysis of variance, linear regression, and chi-square procedures were used to analyze the data obtained in this study.

The findings were that race, but not SES, was related to academic success using CGPA and MEGPA, but not when other factors were included in the equation. High school GPA, but not SAT/ACT scores, remained significantly related to both CGPA and MEGPA when other factors were included. The J (judging) type was significantly related to CGPA, but only when the NCQ subscales were included in the equation. Scholarship athletes were over-represented in the S (sensing) and T (thinking) preferences with ISTP being over-represented when compared to both a national and local MBTI data bank sample of traditional male college students. The P (perceptive) preference was also over-represented when compared to the national sample.

Policy implications and recommendations for educational administrators suggested by this research were discussed.

CHAPTER I
INTRODUCTION

The Problem

Concern about the academic success of college student-athletes has increased as evidence of lower levels of academic success, (especially among income-producing, college student-athletes) has been published (Cramer, 1982; Edwards, 1983; Hochfield, 1987; Sperber, 1990). In response to this issue, much of the focus of the literature has been on addressing the academic criteria for admission of scholarship athletes to higher education institutions (Cook & Motley, 1984; Purdy et al., 1982; Roper & Snow, 1976). Much less attention has been devoted to personal and social factors that contribute to the persistence and eventual graduation of these students (Sedlacek & Adams-Gaston, 1989). The need to address these factors became more important to educational administrators as the National Collegiate Athletic Association (NCAA), which regulates inter-collegiate sports, began to address this concern about academic success and graduation rates of college student-athletes.

In an initial response to this public concern about the low levels of academic success of scholarship athletes, the NCAA in 1983, passed legislation known as Proposition 48 limiting eligibility of incoming freshman athletes with low SAT (under 700) or ACT (under 15) scores and low high school GPAs (under 2.0) in specific core courses. In addition, they required that no student athlete taking less than 12 college credits a semester could play in competition.

Against this background, graduation rates among minority scholarship athletes have been a special concern. Most minority athletes are concentrated in the income-producing team sports (Leach &

Conners, 1984). After two years of operation under the Proposition 48 regulations, 9% of Division I football players, for example, were found to be ineligible; all but 31 of the 206 ineligible players were black (Lang et al., 1988, p. 211). Similarly, in a year-long national study of college basketball athletes conducted for USA Today covering the five academic years between 1980-1985, Norman (1991) reported that minority male basketball players had a 36% graduation rate compared with 48% for all college students.

Questions continued to be raised, however, about the reliability of high school grades and SAT/ACT test scores in predicting who will graduate. A study of college students-athletes recruited before the new NCAA academic eligibility rules went into effect found that many of those students who would have been academically ineligible under the new NCAA rules did, in fact, graduate (Advanced Technology, 1984).

Cook and Motley (1984) concluded from their study that these new regulations suggest a need to look at factors which correlate more highly with academic success. Rehberg and Schafer (1968) had, much earlier, suggested that the following conditions were needed to help athletes achieve academic success: involvement of peers, faculty and staff, provision of an institutional learning environment that encourages student-athlete transfer of learning from sports to the classroom, and providing for the development of positive self-esteem and congruent self-image. There is little information in the literature, however, about whether or not scholarship athletes do experience these conditions; and, if they do, whether or not these conditions influence their academic success.

Researchers who have sampled general college populations of academically at-risk students have suggested that the absence of similar personal and social conditions, as well as precollege academic ones, contribute to a lack a successful experience in college and their eventual dropout (Anderson, 1985; Astin, 1977; Pascarella & Terenzini, 1975; Sedlacek, 1987; Spady, 1971). Synthesizing much of this research, Tinto (1975, 1987) suggested that these three areas are interactional and these personal and social conditions as well as academic conditions must be simultaneously provided to college students to prevent dropout and maximize their opportunities for success in school.

In studying the academic success of student-athletes, Walter et al. (1987) lent support to Tinto's theory of dropout prevention. Walter et al. found that among NCAA Division I schools with high academic standards, less than 20% of the variance in the academic success of college student-athletes was associated with admission criteria, supporting Tinto's model that suggests personal and social factors are more important. The remaining 80% of variance in these athletes' academic success had yet to be identified. Walter et al. suggested that the search for these variables ought to begin with those factors intrinsic to college life.

In responding to continued public concern with respect to graduation rates of college student-athletes, beginning in October, 1992, the NCAA will require that graduation data from all college athletic programs be made public. The graduation rates of male, team sport, student-athletes in income-producing sports (usually football and basketball) have been a frequent focus of concern because most academic problems occur in these sports (Lapchick, 1989). In addition Ervin et al. (1985) found that black athletes and athletes holding scholarships had the poorest academic performance of the athletes they studied.

Under the 1992 NCAA rules requiring the publishing of graduation rates for all colleges under NCAA regulation, college student-athletes are under increased pressure to maintain the academic standing required for acceptance. Most previous research has focused on preadmission criteria. Less research has been done on how to help student-athletes succeed academically once they enter college by providing the conditions within their learning environment that will enhance their academic success.

Adler and Adler (1985), Sedlacek and Adams-Gaston (1989), and Lang et al. (1988) agreed with earlier conclusions of Pascarella and Terenzini (1975) regarding college students in general: that what happens to student-athletes after their arrival on campus is a better indicator of college persistence than the traditional predictors of college success (high school GPAs and SATs) especially for those athletes from minority backgrounds.

Ervin et al. (1985) noted that research on student-athletes' academic success from Division I-A institutions involving team sports is sparse. Even fewer such investigations have been made, that have combined multiple measures of personal and social factors influencing the academic success of these athletes (Sedlacek & Adams-Gaston, 1989). Most studies have used surveys or questionnaires, rather than reliable and validated instruments, to provide a measure of these non-academic conditions needed in a college environment to stimulate a successful academic experience for student-athletes. Reliable and valid instruments now exist which are designed to measure personal and social factors such as those identified in the literature as contributing to the academic success of college students.

One personal measure influencing academic success at all levels of education is the learning style of the student. Lawrence (1982) described a method of learning style assessment based on the Myers-Briggs Type Indicator (MBTI) that led him to make recommendations for adjusting academic learning environments to address the needs of students with different learning styles.

Personal background characteristics such as race, family socioeconomic status, and intent to graduate have also been viewed as important personal factors influencing academic success (Bean, 1982; Tinto, 1975, 1987; Tracey & Sedlacek, 1984). The collection of such personal data can help college administrators address student needs in such areas as economic as well as academic support and the promotion of a learning environment that establishes high standards and encourages respect for cultural differences.

Several personal and social factors have been identified by Tracey and Sedlacek (1984) in an instrument known as the Non-Cognitive Questionnaire (NCQ). They have found this instrument valuable as a predictor of persistence and graduation of college students, especially black students and other nontraditional college student populations. In a recent study involving college student-athletes, Sedlacek and Adams-Gaston (1989) found this instrument useful in predicting persistence among both black and white student-athletes.

The Need for the Study

College and university administrators have the responsibility of creating personal and social as well as academic environments that maximizes student learning. Tinto's theoretical model suggests the personal and social conditions needed to provide this environment for college students.

Athletes, especially income-producing, scholarship athletes, are a unique group of college students. Even if they meet the NCAA academic eligibility requirements, they are frequently granted special admission to colleges without the same level of academic achievement required by the college for most other entering students. As such, they provide a unique opportunity for examining the effectiveness of existing personal and social conditions related to their academic success. Universities typically provide more structure for athletes to increase their academic success. If existing conditions for scholarship athletes are not conducive to their academic success, college administrators could easily establish more effective ones for student-athletes because their academic, personal and social lives are usually more controlled.

Providing conditions that enhance the personal comfort of the student with his learning environment through reducing racial and ethnic barriers, helping them establish long-range goals and enhancing self-esteem have been suggested strategies for increasing retention among academically at-risk college students. Suggestions regarding implementation of these strategies with scholarship athletes has not been as evident in the literature involving the academic success of college student-athletes.

Claxton and Murrell (1987) have stated that there is evidence to suggest that all students can expand their learning strategies and become more active learners who can be empowered to achieve academic success. Students can improve their learning skills if they understand the learning style most compatible with their personalities. Identifying learning strategies consistent with the student's personality can contribute to maximizing their learning. Knowledge of learning style differences among scholarship athletes will provide opportunities to modify the teaching environments to increase the learning successes of these students as well as other students with similar learning styles.

Learning styles of students as well as faculty may also be connected to the social need for a greater sense of community in colleges and universities. Palmer (1987) notes that objectivism, the focusing on detachment and analysis, dominates the college social environment. Palmer advocates that a more subjective approach be equally respected. He believes this can provide the "creative tension" needed to build community. Colleges and university administrations that provide this type of social environment represent, according to Claxton and Murrell (1987), "hallmarks of commitment to human development" (p. vi).

Developing knowledge of the conditions needed for social support that might enhance the social development of scholarship athletes and thus contribute to their academic success has received little research attention. The broad impact of peer, faculty and staff, institutional and community social supports on student-athletes have been addressed by only a few researchers. Most recently, Adler and Adler (1991) examined these factors, but their focus was not on specific academic success outcomes but on the resulting role conflicts between academics and athletics. Knowing more about the personal and social conditions needed to enhance the academic success of college student-athletes, especially those most ambitiously recruited for their athletic abilities in income-producing sports, may help higher education administrators define institutional missions and establish policies that can provide these conditions. The knowledge gained may not only enhance the academic success of scholarship athletes, but may suggest strategies to enhance the academic success of all students and also provide a test of Tinto's theoretical model.

Definition of Terms

An _academically at-risk student_ is any student whose high school grades and/or college entrance exam scores on the SAT were below the normal college admission standards for the college in which they were enrolled.

Academic progress toward graduation is the percentage of the college credits passed of the credits attempted.

Academic success is the ability to maintain a college mean course grade average of 2.0 or above in two specific core course areas: English and mathematics and make continued "academic progress toward graduation."

A _college student-athlete_ is any athlete recruited by a college or university to play one or more income-producing team sports while attending that institution as a full-time student.

Learning style is the preferred patterns of mental functioning, attitudes and interests, preferred learning environments and preferred learning tools of an individual as measured by the Myers-Briggs Type Indicator (Lawrence, 1984).

A scholarship athlete is any athlete receiving a full reimbursement of tuition and living costs in exchange for intercollegiate athletic participation.

A weighted linear combination is an ordered sequence of variables in a unidimensional manner by their assigned values.

The College Level Academic Skills Test (CLAST) is a test of college level skills in communication and computation developed by the State of Florida and judged to be associated with successful performance and progression in college.

Statement of Purpose

The purpose of this study was to examine the personal and social conditions described in Tinto's (1987) theoretical model of dropout prevention that are related to three defined measures of academic success: College GPA (CGPA), Mathematics and English GPA (MEGPA) and Percentage of Credits Passed (PCTCR). Male scholarship athletes in the income-producing college sports of football and basketball (hereafter known as scholarship athletes) were used as the subjects for this study. The study had two major objectives. The first objective was to provide a test of Tinto's theory of dropout prevention within this special group. The second objective was to provide information for higher education administrators on how these personal and social conditions may be related to the three dependent measures of academic success for the scholarship athlete.

Research Question

To accomplish the purpose of this study the following research question was developed:

> What is the relationship between the level of academic success of income-producing, scholarship athletes as measured by their mean grades in all college courses (College GPA); in specific core course areas (Mathematics and English GPA); and their continued academic progress toward graduation (Percentage of Credits Passed); and selected personal background factors (race, socioecononmic status); precollege academic factors (high school GPA and SAT/ACT scores); their learning styles (Myers-Briggs Type Indicator); and other noncognitive variables (Non-Cognitive Questionnaire) suggested in Tinto's model of dropout prevention?

Research Hypotheses

To investigate the research question, the following hypotheses were developed:

Hypothesis #1

> There is no relationship between each of the measures of academic success of scholarship athletes and the personal background factors of athletes' race and their family socioeconomic background (using parents occupation from the Non-Cognitive Questionnaire).

Hypothesis #2

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using

high school GPA) and their academic aptitude (using SAT/ACT scores).

Hypothesis #3a

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores).

Hypothesis #3b

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using High School GPA) and their academic aptitude (using SAT/ACT scores) and their dichotomous MBTI measures.

Hypothesis #4a

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their continuous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person, and (4) Demonstrated Community Service.

Hypothesis #4b

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their dichotomous MBTI scores and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person, and (4) Demonstrated Community Service.

Hypothesis #5

There is no relationship between any of the three defined measures of academic success and MBTI type measures.

Hypothesis #6a

Type distribution of scholarship athletes will not differ significantly from type distribution of male University of Florida students (class of 1971).

Hypothesis #6b

Type distribution of scholarship athletes will not differ significantly from type distribution of college students combining all male college student samples in the MBTI Atlas of Types.

Overview of the Research Study

The remainder of this research study contains a review of the literature, a description of the methodology, the results of the study and a discussion of those results. Chapter II reviews the literature on personal and social factors related to both general college students' and student-athletes' academic success.

Chapter III describes the research design, procedures, limitations and delimitations of the research methodology used for this study. Chapter IV presents the results of the analysis of the data. Finally, Chapter V summarizes these results, their policy implications and recommendations for further research.

CHAPTER II
REVIEW OF THE LITERATURE

Theoretical Base

Concern for academic success of team sport college student-athletes (especially football and basketball players) parallels a growing general concern for the academic success of all at-risk college students as the need for a more highly educated society is accelerated. A theoretical base for examining the conditions for academic success in college may be found in the dropout prevention literature.

During the last three decades, researchers have explored numerous factors felt to contribute to student attrition and retention in college. Initially these efforts focused on the characteristics of these low-achieving students (Summerskill, 1962).

Summerskill (1962) reviewed the early literature in this area and identified several factors including age, gender, socioeconomic status, academic functioning, aptitude and college performance. As a result of this review Summerskill suggested more attention to the institutional practices that contributed to high attrition. Stern (1965) also noted that the characteristics of students and the educational objectives of the institution must both be employed as guides in the design of maximally effective living environments for college students.

The growing awareness of institutional as well as student factors contributing to student dropout led researchers to develop theoretical models incorporating both individual and institutional factors. The first such model was developed by Spady (1971) using Durkheim's (1951) suicide theory as a basis. Spady suggested that personal attributes and environmental influences and demands (peers, faculty, courses) are connected. Spady (1970) earlier conducted a study of high school athletes concluding that certain extracurricular (leadership and service-oriented) activities fostered their academic success in college.

However, Spady (1971) continued to emphasize academic performance as the dominant factor in student attrition. Earlier Lingren (1969) had suggested, however, that if academic factors were primary problem experienced by dropouts, then the problem would have been easily solved by then. Lingren felt instead that social and self-development factors were key. Rootman (1972) placed his research emphasis on areas similar to Lingren. Rootman studied students who voluntarily withdrew from a military academy and concluded that persistence was related to the degree of "personal fit" with students and their environment. Withdrawal was the students' way of coping with a lack of "personal fit" Cope and Hannah (1975), however, suggested that there is no single departure-prone personality. They emphasized self-selection as a critical variable.

Tinto (1975) brought together many aspects of these earlier models and research studies by supporting the integration of academic (prior school achievement), personal (family background and personal attributes of intention and commitment), and social (social support) factors suggested previously. He emphasized that those students most likely to drop out of college were those who could not establish a social identity on campus.

Pascarella and Terenzini's (1979, 1980) research supported Tinto's model. They concluded that the social integration of the student on campus was more important than academic ability in predicting dropouts. They also concluded that a student's personal goals, values, and attitudes were equally important.

Several other researchers gave support to and further extended Tinto's model. Astin (1977) emphasized that the role of higher education institutions was to develop student potential. Research by

Cope (1978) emphasized the importance of social support. Sharp and Chason (1978) suggested that individual behavior is a function of the college environment in which persons find themselves. Pantages and Creedon (1978) and Ramist (1981) further defined the personal and institutional attributes (academic, financial, motivational, personal goals, emotional and personal relationship adjustments) required for success in school.

Anderson (1981, 1985) suggested that the primary factors influencing academic success are the academic, personal and social conditions present. He used these factors to develop a force field analysis approach that emphasized conditions that encouraged and those that discouraged persistence.

Pascarella (1982) emphasized an institutional focus to address dropout prevention. Noel's (1985) work helped to refocus the literature relating to institutional influences in a more positive direction by suggesting the helping the student to feel more successful was the primary institutional mission. Noel urged moving toward this "value added notion" and away from "victim blaming" in order to enhance student/institutional fit.

In his later writings, Tinto (1985, 1987) also placed strong emphasis on the institutional role and in developing an institutional mission focused on meeting student needs. He viewed college student dropout as similar to any other form of community departure. He suggested that persistence in college is a process of establishing competent membership through becoming integrated into the social and intellectual life of the college community.

Tinto (1987) viewed isolation as an important factor in human withdrawal. He suggested that commitment of individuals to an institution is most strongly influenced by the quality and quantity of the individual's contacts with other students, faculty, and staff. Tinto noted that those who might not otherwise establish membership have not received this needed institutional support. Thus, those institutions committed to students were, Tinto believed, ". . . more likely to fare better in academic marketplace of the future" (p. 186).

Departure decisions, Tinto (1987) theorized, hinge on the individual's perceptions of their experience within the institution. He suggested that both social (affiliation with others) and intellectual (shared values) must be poorly integrated before dropout occurs. Tinto's model suggests that retention is not a goal in itself but rather the outcome of an institution's attempts to increase the student's academic and social integration.

Tinto, like Durkheim, concluded that social and intellectual restructuring is needed in our institutions. Tinto views this restructuring not in the formal structures of institutions but in their underlying values.

Pascarella and Terenzini (1991) in reviewing models of student change in college suggest that there are several types of theories and models to explain student change including psychosocial theories such as Chickering (1969) cognitive structural theories such as Piaget (1928) and Kohlberg (1958), typology models such as Jung (1971) and college impact models such as Lingren (1969) and Spady (1970).

Typology models, in general, incorporate some of the personal (internal) conditions necessary for school success, cognitive-structural and college impact models focus more on the social (external) conditions that may influence a student's decision to drop out or remain in school. Psychosocial theories integrate some elements of both personal and social factors, although Pascarella and Terenzini (1991) viewed these theories as closely related to cognitive-structural theories. Tinto (1985, 1987) synthesized some of each of these theories in his model of dropout prevention.

Personal Conditions Relating to Academic Success

Personal conditions frequently mentioned in the literature that are believed to influence the academic success of college students include those of race, socioeconomic status, having goals and the commitment to finish school, parental emotional support, and personality factors, especially those that influence approaches to learning. (See also Appendix A, Table A-1 and A-3.)

Race

Cross and Astin (1980) conducted a study of black student attrition using several variables known to be related to dropout in general college populations. These variables included background characteristics, institutional and environmental characteristics, financial aid status and college experience and attitude variables. They found that blacks were more likely to persist in black colleges than predominantly white ones. They also found the most positive predictor of dropout was working over 21 hours per week for both blacks and whites while in school.

Reviewing the literature on black student retention (Dunston & Others, 1983) found that in addition to the level of academic preparation, alienation and lack of group identification were also key influences on attrition among black students. Other factors noted in this review were medical and other personal problems, socioeconomic status, motivation, degree aspirations, personal values, self-concept and environmental characteristics.

Bennett and Bean (1984) conducted a research study on black student attrition. They identified several factors believed to reduce college attrition of black students. These factors involved experiencing positive interracial contact both prior to and during their college experience; being involved in a college prep program in high school; being at a higher stage of ethnicity (level of acceptance of one's racial identity) and preparedness; and experiencing lower levels of alienation.

Some authors have also suggested that there are cognitive style differences associated with different ethnic groups. O'Donnell and O'Donnell (1987) conducted a study on the relationship between cognitive preference, achievement and ethnicity in high school algebra students. A learning style test was administered to these students. Researchers revealed that orientals, blacks and Hispanics had different learning strengths. Blacks evidenced greater strength in symbolic scores and less strength in graphic scores than Hispanic students in this study. Jones (1986) suggested that black students' culture may promote differences in learning style and thus place them at odds with the dominant style in the school learning environment. Ainesworth (1986) noted similar cultural differences in learning style and the need for faculty to recognize and address these differences in the college classroom.

Claxton (1990) reviewing the research in this area concluded that minority students' learning styles were not different from that of the dominant culture in which they lived. Cheng (1990) however, challenged Claxton's thesis and urged that university faculty respect culturally diverse student populations and recognize learning style differences in these groups.

Other recent studies suggest that various college experiences may affect black students differently than white students (Astin, 1982; Pascarella, 1985; Tracey & Sedlacek, 1984). Tracey and Sedlacek (1984) found three conditions which were significant in predicting retention and graduation especially for black students using their Non-Cognitive Questionnaire (NCQ). These factors were the availability of a positive support person, having a positive self-concept and community involvement. Similar results were found using the NCQ with other nontraditional college student groups.

Socioeconomic Status

Numerous variables have been used to identify socioeconomic factors including parents' occupation, parents' educational level, number of children, household size, parents' marital status and family income. All of these factors can be used to help predict achievement among white students. However, for black students only economic status been shown to be related to academic achievement and educational attainment (Epps, 1983).

Clark (1983), who studied high- and low-achieving black students who came from low socioeconomic backgrounds, concluded from his case studies that the quality of the life at home was the most important factor relating to student's academic success, not their socioeconomic level. Thomas (1981) noted, however, that upper-middle class children average approximately four more years of schooling than children from lower status family backgrounds. Jencks (1972) attributed most of the variance to the fact that middle- and upper-class parents are able to provide their children with the skills and experiences that schools value and reward.

Black freshman students were found to have fewer financial family resources (Bayer, 1972). This may help to explain findings that black students were more likely to attend low-cost colleges regardless of their ability (Morris, 1981).

Thomas (1981) conducted a study of the effects of standardized achievement tests and family status on black and white college access. Her findings confirmed that low achievement scores and low family socioeconomic status still represent significant barriers for students with these background characteristics.

Goals and Commitments

Clark and Plotkin's (1964) findings suggested that for black students in predominantly white universities, their academic success depended on their goals and commitment rather than on precollege performance or entrance tests. Beasley and Sease (1974) concluded from their research that having reasons for attending college that were appropriate was a valid predictor of college success for black students.

Epps (1983) noted that survey research has revealed that black low-income families have high educational aspirations for their children. However, researchers Pfiefer and Sedlacek (1971) and McFadden (1984) found higher achieving blacks were different from higher achieving whites in that the blacks students, in and of themselves, evidenced lower academic aspiration levels.

Further support for the relationship between aspirations and academic success is evidenced in a study by Pratt et al. (1979). They found degree aspiration was the best predictor of freshman GPA at a predominantly black southeastern college, while standardized measures were higher than expected grades in some cases.

Family Support and Level of Self-Esteem

Shavelson and Bollis (1982) considered self-concept not just a function of the individual attributers, but a picture of oneself that is formed by experiences within various environments and interactions with others in these environments. Phinney (1988) found a strong relationship between positive ethnic identity and self-esteem.

Parents are believed to have the strongest influence on their children's self-esteem (Frey & Carlock, 1989). Parents influence behaviors, attitudes, and commitment to school. McCarthy (1988) has suggested that early parental rejection is positively related to lower achievement. As further support for the importance of parental influence on self-esteem, Rosenberg (1989) found that the amount of parental attention was also related to a person's self-esteem.

Clark's (1983) case study of successful and unsuccessful students from black, low-income families suggested that parents who are able to build up their children's self-esteem, treat them with respect, and encourage learning activities were found to have more academically successful children; have higher educational aspirations for their children; be more actively involved in learning activities with them; and involve their children in decision-making activities affecting them.

Faust (1980), referring to students precollege educational experience, suggested that teachers need to provide similar components for students to learn effectively in the classroom. Like effective parents, teachers must set limits of appropriate conduct and establish reasonable standards. Faust believed every student was capable of responding at some level of excellence. Faust noted further that it is hard to maintain self-esteem in the absence of school success. Underachievers (Pitcher & Blaushield, 1970) and college dropouts (Astin, 1980) have been found to have lower self-worth.

Frey and Carlock (1989) suggested that the school environment is the second most important environment in the development of one's self-concept. It follows further that students with a positive self-concept have a better chance of success in life. Frey and Carlock (1989) also discussed the importance of positive peer relationships to provide peer feedback which develops self-esteem.

Finding ways to raise students' self-esteem in the classroom involves the instructor's using different approaches to help students learn. Covington and Beery (1984) urged the development of noncompetitive learning structures to enhance self-esteem such as mastery learning and cooperative and contractual forms of learning. Frey and Carlock (1989) urged the use of learning how to learn skills and problem solving strategies as a method of raising students self-esteem.

Hampton (1980) suggested that the focus of education needs to be on the emotional and sensing needs of the student before considering the conceptual and learning needs. Faust (1980) stated that it was important for teachers to be familiar with this inner environment in which learning takes place.

Although more research on self-esteem has been focused on precollege students, the influence of self-esteem on college student success has been studied by many researchers (Bailey, 1971; Kubiniec, 1970; Reynolds, 1982; Sedlacek, 1987). In a major longitudinal study Pascarella et al. (1987) studied the influence of college of student self-concept over a nine-year period involving 379 four-year colleges. Their findings suggested that both social and academic experiences during college had a significant effect on self-concept even after controlling for differences in precollege self-esteem, institutional differences and post-college experiences. No major racial or gender differences were noted except for black men for whom collegiate social leadership had the highest effect after precollege self-concept. Unlike other groups, black men failed to show a positive relationship between academic achievement and academic self-concept.

Students with high self-esteem have been shown to learn differently. Kuiper and MacDonald (1982) and McCarthy (1988) found that students with high self-esteem have deeper and more elaborate learning strategies.

Prominent therapists have connected self-esteem and relationships to others. Satir (1976), the pioneer family systems therapist, suggested that anything that injures self-esteem reduces the opportunity to make good contact with others. Rogers (1951) also noted for his work on the concept of self-esteem viewed feedback as a critical element influencing one's self-esteem. Through this feedback a person develops a self-image that guides his or her adjustment to their external world. Rogers noted that harsh, rejecting judgments influence a person's self-acceptance. He theorized further that an atmosphere of acceptance (not necessarily agreement with) and trust of another person was critical to the person's development of positive self-esteem.

Branden (1987) noted that one's self-esteem was the key to success or failure. He believed it critically affected every aspect of our life experience. Branden also noted that one's response to events is shaped by who and what we think we are.

Coopersmith (1967) defined self-esteem as "... the evaluative attitude towards oneself" (p. 2). He saw a strong relationship between success and self-esteem. Coopersmith devoted his life to exploring the "antecedents of self-esteem." He identified three major antecedents: 1) parental support, 2) defined limits, and 3) respectful treatment.

Psychological Type

An understanding of student psychological type can help to understand differences in college students and why they might not respond in the same way to a common college experience. The Myers-Briggs Type Indicator (MBTI) is a frequently cited instrument used to identify psychological type in college students.

The MBTI is based on a theory of personality developed by Carl Jung and operationalized by Isabel Briggs Myers and her mother, Katharine Cook Briggs. As described in the manual for the MBTI (Myers & McCaulley, 1985), Jung saw patterns in the way people perceived and made judgments which he called "psychological types." The MBTI can be helpful in interpreting data on motivation, aptitude, achievement, communication styles and career patterns.

Jung's theory describes four mental powers or functions. The two perception functions are sensing (S), using the five senses to perceive the immediate reality, and intuition (N), using insight imagination or unconscious association to perceive possibilities. The rational decision-making and judging functions are thinking (T) in which decisions focus on objective, logical analysis and feeling (F) in which decisions are reached by weighing one's personal values. The MBTI uses questions which present choices between sensory or intuitive interests and between thinking and feeling. The combined functions are ST, SF, NF, and NT.

In Jung's model all four of the functions described above and discussed in the MBTI manual are used. Each type has a unique hierarchy of preference for the functions. One preference will be favored--either perceptive (S or N) or a judgment process (T or F). The function preferred is known as the dominant function. The second is complementary and known as the auxiliary function. In normal development, college students are expected to have differentiated dominant functions and be well on the way to differentiating their auxiliary functions. The third or tertiary function and fourth, inferior function are assumed to be less consciously available.

Jung describes, and the MBTI manual indicates, two additional dimensions known as the attitudes extraversion (E) and introversion (I). Outward-looking extraverts are more oriented to the outer world of objects and persons; inward-looking introverts are more oriented to the world of concepts and ideas. The fourth MBTI preference--either judging (J) or perception (P) reflects the individuals perceived preference for dealing with the outer world. Judging (J) types are oriented toward establishing a planned, organized and controlled world. Perceptive types are organized toward establishing greater flexibility and spontaneity in their world.

According to the MBTI manual, knowledge of an individual's choices within these four preferences (E or I, S or N, T or F, and J or P) allows for classification of individuals into one of the 16 types which can be used both for research purposes and for designing programs and services. Myers (1962) estimated that, in the general population of the United States, extraverts (Es) represent about 75% of the population while introverts (Is) represent the remaining 25%. The same split was identified between sensing (S) and intuition (N) with Ss representing the majority. About 60% of the thinking (T) types are male while 65% of feeling (F) types are female. About 55% of the population prefer judgment (J). More recent analysis by preference noted in the MBTI manual, however, show the percentage of Es has changed. Current data from the MBTI data bank (in which college students are over-represented compared to the general population) show about equal numbers of Es for males using Form F. Ns also occur with greater frequency in more recent MBTI samples than in Myers estimates. One possible explanation suggested in the manual is that high school dropouts were not included in Myers' samples. The MBTI manual also notes that Myers' separate, unpublished studies of high school dropouts include greater proportions of extraverts and sensing types.

Type theory is based on the assumption that different behavior patterns exist in individuals and can predict, among other things, how they can best learn (Lawrence, 1982;, Myers, 1971; Myers & McCaulley, 1985). There are no good or bad types in this personality approach, only different types of skills in which individual excel. Different types of people are interested in different occupations, different types of activities, and have different strengths and weaknesses. McCaulley (1990) has suggested that Jung's framework can provide a useful understanding of perceptual and cognitive styles.

Psychological Type and Learning Style

Curry (1983) suggested personality type may be seen as the core of a framework of learning style approaches. Learning style has been examined from several different levels including (1) personality, (2) information processing, (3) social interaction and (4) instructional methods (Claxton & Murrell, 1987). Claxton and Murrell viewed the MBTI as comprehensive in its portrait of the learner. They noted that there was some evidence to suggest that there is a striking mismatch between academically at-risk students and faculty generally in their learning styles. They encouraged research to determine how critical this mismatch is.

Lawrence (1982) suggested that, by taking advantage of their students' psychological type, teachers could use the strengths of their students' types to overcome learning problems. To that end, Lawrence (1984) surveyed the literature on learning-style research involving the use of the MBTI and compiled lists of learning characteristics associated with each of the eight dimensions of the MBTI and various dimension pairs. He found the learning style differences identified supported by predictions from Jung and Myers' extension of it.

MBTI Preferences and Learning. Myers (1980) suggested that differences in type result in different reactions to instructional procedures and different courses of study. All four preferences of the MBTI have been shown to influence learning. The relationship of each preference to learning is described below.

The SN preference and learning. Researchers using the MBTI have suggested that the perception functions, either intuitive (N) or sensing (S), are strongly linked to the learning process. Intuitives (Ns) have been found to be more flexible learners (Barberouse, 1965; Hatfield, 1968). Similarly, other researchers (McCaulley & Natter, 1974; Mills, 1983) have found Ns have more traditional academic skills and use more formal operational skills (Contessa, 1979).

The intuitive (N) student has a strong interest in both spoken and written language and thus develops expressive skills which benefit them in the classroom both in discussion and testing situations. The N preference is also linked to imagination, analytical skills and independence in learning. Routines quickly bore the intuitive (N) learner who needs inspiration to become fully engaged in learning (Lawrence, 1982).

The sensing (S) learner, in contrast, is most concerned about the practicality and functional aspects of what is being learned. A teacher who emphasizes the concrete realities of a situation is most appealing to the sensing (S) student. The sensing (S) student is more interested in action and doing something with almost any tangible object than listening to what anyone is saying unless it adds something definite to their view of the real world. The S preference reflects interest in practical skills (Lawrence, 1982).

Sensing (S) types seem to do well in less traditional, more experiential, learning environments (Contessa, 1979). Sensing (S) students appreciate television and the audio-visual learning aids (McCaulley & Natter, 1974) and find memorizing easy (Hoffman & Betkouski, 1981), but have greater difficulty with conceptualization of material (Yokomoto & Ware, 1981). Lawrence (1982) noted that sensing (S) students generally got lower grades, and far more frequently than intuitives (Ns), dropped out of school.

The TF preference and learning. In the thinking/feeling (T/F) dimension, thinkers (Ts) are stimulated by materials that are organized and logical. They are analytical. Thus, if their teacher is not logical and organized they are less likely to bring their best energies into the learning situation. If feeling (F) is the learner's preferred means of taking in information, then the learner has to care about what was being learned as well as feel that the teacher is a caring person. The preference for the tasks involved differentiates Ts from Fs also. Thus it follows also that Ts prefer tasks involving logical analysis while Fs prefer tasks requiring an understanding of human nature (Lawrence, 1982).

The EI preference and learning. The extraverted/introverted (EI) dimension indicates the degree to which students rely on the active learning process. Extraverts (Es) need this active type of learning while introverts (Is) require a quieter environment. Extraverts (Es) learn best through trial and error learning, while introverts (Is) learn best through teacher-centered instruction (Jensen, 1987).

Extroverts (Es) want to act and manage their world. By contrast, introverts (Is) are much more private in exercising their mental skills. Thus, extraverts (Es) are most interested in their outer world of persons, objects and actions, while introverts (Is) gravitate toward an inner world of concepts and ideas. Qualities such as competitiveness, self-expression and leadership have also been linked to extraverts (Lawrence, 1982).

The JP preference and learning. In studies involving the judging (J) and perceiving (P) attitude or lifestyle preference, researchers found this dimension also related to grades achieved and whether or not a student finished high school and/or college (Nisbet et al., 1981, 1982; Schurr & Ruble, 1986). In these and other studies described in the MBTI manual studies, researchers found judging (J) types, perhaps due to their organizational and planning skills and their persistence, were more likely to get better grades and also more likely to finish school than the more spontaneous perceptive (P) types. Perceptives (Ps), on the other hand, did better on aptitude measures and they have a broad range of subject interests.

The "real artistry in teaching" according to Lawrence (1982, p. 17) is to capture the interest of these different types of learners. One approach is to find shared perceptions or shared values. Lawrence believes that the dominant mental process of an individual is the essential element in determining the most effective learning style for that person.

MBTI Preferences and Academic Success

As reported in the MBTI manual, a review of research on the MBTI in education found that the I, N, and J preferences were most strongly related to success in traditional academic settings. Myers and McCaulley (1985) noted that there are three aspects of educational achievement (1) aptitude, (2) application and (3) interest. Theory suggests that those students with IN preferences on the MBTI which reflect the ability to work with concepts and ideas will do well in academic settings because their interests match the tasks required. Scholastic tests measure the IN aspects of learning, not the ES aspects which are more real life, practical and applied.

More recent research has continued to confirm these findings. Using the entire graduating class of a midwestern college, Schurr and Ruble (1986, 1988) found that Is and Ns had higher aptitude and achievement and Js tended to achieve more than Ps. Anchors (1989), Kalsbeek (1987), and Provost (1985) all confirmed that Js had higher GPAs than Ps in their college student samples. Anchors (1989) found Is to have higher GPAs than Es.

MBTI Preferences of Academically At-Risk Students

Research on learning styles related to the MBTI has implications for students who might have difficulties in traditional academic areas. These academically at-risk students may instead have different learning strengths and thus may need to approach learning tasks differently, have material presented in other ways and be provided with different types of learning environments (Lawrence, 1982; McCaulley & Natter, 1974; Myers, 1980; Nisbet et al., 1981).

The MBTI manual provides evidence that at-risk students are more likely to be sensing (Ss) while university faculty are more likely to be intuitives (Ns). Also there are more extraverts with perception (EPs) among academically at-risk students. Myers' data in the manual and the University of Florida data show fewer extraverts with sensing (ESs) the higher the person is on the academic ladder. Myers and McCaulley (1985) suggested that since the aim of education is to help students of all types succeed, data on type differences can help students plan their learning and faculty plan their instruction to maximize the aptitude, interest and application of each type.

Several researchers' studies of college students in remedial programs showed dominance of certain preferences among at-risk populations especially in extraversion (E), sensing (S) and perception (P) preferences (Jensen, 1987; Nisbet et al., 1982; Provost, 1985).

McCaulley and Natter (1974), in a two-year study of 289 male and female students receiving special or remedial services found 81% were sensing (S) but 74% were judging (J). Other studies, of at-risk groups, however, Bourg (1979) and Nisbet et al. (1982) found lower percentages of Js as might be expected in such a sample.

Provost (1985) found some SPs at-risk in her research on adjustment and persistence of college students at Rollins College. Extraverts (Es) with high involvement in college life on campus appeared most likely to persist. Partially replicating this research however, Anchors (1989) found ESTPs and ESFPs were over-represented in their sample of students who were still in college after four years. ENFPs were under-represented. No relationship was found with either EI or JP with respect to persistence but these dimensions were found to be related to academic achievement in this study.

Kalsbeek (1987) noted that the MBTI was a valuable instrument in student retention. In discussing the use of the MBTI for that purpose, he suggested that the MBTI can provide information on students' natural interests, learning commitments, values and work habits thus maximizing the students' fit with their college environments.

Kalsbeek also noted that the MBTI is compatible with Tinto's model that emphasized the integration of social and academic factors as a key to dropout prevention. He argued that students' MBTI preference may be related to the degree of integration they experience in their college environment; and may also be directly related to the process they use to continually assess their commitments to the educational objectives of the institution. He suggested further that information from the MBTI can provide the kinds of support not available in the traditional classroom and can improve institutional responsiveness and sensitivity to students' individual characteristics which help to improve academic and social integration in their campus environments.

Social Conditions Relating to Academic Success

In this study, social conditions relating to academic success include those conditions external to the student that influence their social development. These influences include supportive contacts with peers, faculty, staff and others in the broader communities of which the student is a member and participation in extracurricular activities. (See also Appendix A, Table A-2.)

Social conditions experienced by the student are also a reflection of a person's level of self-esteem according to Satir (1976). Rogers (1951) further suggested that feedback and communication skills are critical to the individual's social experiences.

Social involvement with others is critical to effective learning. One's social experiences in school strongly influence decisions to remain or dropout of school. Cope (1978) found that college dropouts had less social support. Pitcher and Blaushield (1970) noted that students who are unsuccessful tend to be uninvolved in learning rather than incapable. Noel (1985) indicates that "...the absence of social integration and the social membership it engenders may be a significant element in an individual's decision to withdraw from college" (p. 37).

Peer Support

Researchers over many years have conducted studies that continued to support the benefit of programs designed to provide peer support networks for new students in higher education (Hanks & Eckland, 1976; Rootman, 1972; Spady, 1971).

Pascarella and Terenzini's (1991) review of recent literature in this area suggests that the influence of peers may be as great or greater than faculty. Too much involvement may have a negative effect on students, however, by limiting the time available to them for other activities (Astin, 1977).

Weidman (1984) has suggested that precollege friendship networks as well as family contacts continue to influence the college student even after the student leaves the home environment to attend college. This variable had not been identified in other major studies of students at academic risk.

Faculty Support

Research by Astin and Kent (1983) and Pascarella and Terenzini (1975, 1976, 1977, 1979 1980, 1985, 1991) demonstrated influence of informal faculty contact with students on their academic success. Pascarella et al.'s (1987) longitudinal study noted that knowing a professor or administrator personally had significant positive associations with self-concept for all groups except white women. Other earlier studies also supported the importance of informal faculty contact (Astin, 1977; Lacy, 1978; Pascarella, 1980; Wilson et al., 1975).

Pascarella and Terenzini's (1991) review of the literature on student-faculty contact found a positive relationship between student-faculty contact and attitude and value change in areas including altruism and political liberalism. They noted Chickering's (1974) findings that suggest that students' attitudes and values as they enter college appear to influence the activities they choose to participate in and suggested that this may also influence the kind of faculty members with whom students have contact.

Institutional Support

Students' attitudes, values and sense of personal integrity are influenced by the college environment (Chickering, 1969). Chickering identified seven vectors influencing student development while attending an institution of higher education. These are (1) achieving competence, (2) managing emotions, (3) developing autonomy, (4) establishing identity, (5) freeing interpersonal relationships, (6) developing purpose, and (7) developing integrity.

Chickering (1969) further suggested some institutional conditions necessary to influence student development. These included (1) clarifying institutional objectives, (2) having sensitivity to institutional size so it does not restrict student participation, (3) making curricular impact through curricular flexibility, variety of teaching modes, opportunities for student participation in learning and learning oriented evaluation, (4) providing residence hall diversity, (5) having friendly faculty and administrative contact with students in diverse settings, and (6) providing environments that support student friendships, groups and student culture.

The racial environment may influence the success of minority students. Cross and Astin (1981), as noted earlier, found in their study that blacks more likely to persist in black colleges. Sedlacek (1987) in a review of 20 years of research on black students on predominantly white campuses, identified admissions policies, faculty relations, campus life and attitudes of white students as areas that affect black students in the college environment. Sedlacek (1987) acknowledged that many of these same issues influence white students' experiences with their campus environment, but suggested that for black students, their race is an additional problem to overcome.

Institutional support is also reflected in the institution's mission statement and its goals and objectives. Those researchers involved in reducing attrition and promoting retention such as Astin (1977) and Noel et al. (1985) have urged colleges to adopt missions that involve "developing student potential" and taking a "value added approach" with respect to student development and to "involve students" in the learning process (Astin, 1984).

Community Support and Community Involvement

Several earlier-cited studies suggest that community support is also needed by academically at-risk students if they are to remain in school. Such support is especially needed by minority students who may lack adequate role models for academic success within the college community. Churches and community cultural organizations and activities can enhance this support. Community mentors can also provide support to the college student and provide role models (Sedlacek, 1987). Sedlacek further suggested that community service in the form of community involvement in one's racial or cultural community service is an important factor in predicting academic success.

Academic Background and Academic Success

Ellison et al. (1973) found biographical (nonacademic factors) data were equally effective in some cases and better in other cases than SAT scores as predictors of academic success for both the black and white college students in their study.

Nettles et al. (1986) indicated that their literature review suggested that the college environment and other institution variables are important considerations in retention. However, their results supported the validity of traditional academic admission criteria. Among their major conclusions was that four variables: SAT scores; student satisfaction; peer group relations; and interfering problems (financial, social and psychological) did not predict as well for blacks as whites. They proposed that a possible explanation of this difference might have been related to differences in precollege educational experiences of the two groups since precollege attitudinal and behavioral characteristics of the students contribute too much to be ignored to the prediction of their college GPAs. Nettles et al. concluded, therefore, that those involved in the college admission process should consider not only intellectual but also nonintellectual factors in their admissions process.

Personal Conditions and Athletes' Academic Success

Research using student-athlete subjects has also focused on personal factors influencing success including minority group status factors, socioeconomic factors, personal goals and commitments, family emotional support and personality type as variables related to the academic success of student-athletes (see Appendix A, Table A-4). The following literature identifies some of the major findings:

Minority Group Status

Many studies have examined minority group status as a variable affecting the academic success of team-sport athletes. Nearly all have identified higher academic performance of whites than minority students (Cook & Motley, 1984; Leach & Conners, 1984; Oates, 1979; Picou, 1978; Underwood, 1980).

Picou (1978) found athletic behavior facilitated white student-athletes' association with a college-oriented peer group and supported educational aspirations; similar behavior for blacks was not confirmed, suggesting to the researcher that other personal or social factors might be relevant. Cook and Motley (1984) also found race to be a significant variable in predicting higher academic success of white college football players.

Sedlacek and Adams-Gaston (1989) in studying college student-athletes, found that although both white and black athletes' academic success was influenced by selected personal and social factors using the Non-Cognitive Questionnaire (NCQ), the strength factors predicted academic success more strongly for blacks than for whites.

Socioeconomic Status

As with studies of general college student groups, a number of studies have identified socioeconomic factors, (family size and parental education, occupation, and income) influence a student-athlete's educational aspirations regardless of intelligence (Adler & Adler, 1985, 1991; McMurry, 1974; Purdy et al., 1982; Sedlacek & Adams-Gaston, 1989). Adler and Adler (1985, 1991) concluded that structural factors within the university system canceled out much of the effect of socioeconomic factors. Both Hauser and Lueptow (1978) and Adler and Adler (1991) noted the lack of low socioeconomic status backgrounds among the athletes they studied.

Leach and Conners (1984) noted that in poor black families, educational achievement was likely to go unnoticed and unappreciated and may even be viewed with suspicion in a home where survival concerns were paramount. Instead, Edwards (1983) noted that black families and black communities tend to reward athletic activities more than other activities.

Even if the black student-athlete's parents were college graduates, noted Leach and Conners (1984), most were not athletes nor were they likely to have attended white colleges so their advice to their offspring may have had little validity. It has been found that when socioeconomic factors are controlled, however, few differences have been found.

Goals and Commitments

Other important personal factors influencing college student-athletes' success are their personal goals and their commitment to the institution. Often the student-athlete's ultimate goal is to be offered a lucrative contract to play on a professional team. This can result in a low level of educational commitment and influence school success (Adler & Adler, 1991).

Spady (1970) has suggested that participation in high school sports may lead to increased educational aspiration but not necessarily develop the characteristics needed for academic success in college. Landers et al. (1978) in a replication of this study again found further support for these findings.

Sowa and Gressard (1983) found the educational goals and career patterns of athletes were not as well-defined as those of nonathletes. Kennedy and Dimick (1987) noted athletes had less realistic goals. Clark and Plotkin (1964) found earlier, however, that athletes were more involved with their institution than nonathletes and this involvement contributed to their academic persistence compared to a nonathlete group. They noted that their results supported Astin's (1984) view of the benefits of student involvement in campus life as a contributor to college success.

Commitment to studying is another aspect of goals and commitment that has been considered in the literature. Lang et al. (1988) found in her study of college football players that those players who studied on a regular basis had higher GPAs than those who studied just before a test. Rhatigan (1984), however, indicated the difficulties of this commitment given not only the time and energy devoted to sport practice and games expected of the student-athlete, but also the travel time and missed classes due to away games.

Adler and Adler (1991) in a longitudinal field study of a college basketball team at a large midwestern university reported a steady decline in academic aspirations among these student-athletes during their college years. Among their major conclusions was that these athletes experienced severe role conflicts which were usually resolved overtime by committing to their athletic role rather than the academic one. They also reported that the athletes they studied appeared to lose their future orientation as a result of their present-oriented focus on their involvement in their sport.

Family Support and Level of Self-Esteem

Self-esteem of athletes has been frequently studied in relationship to their athletic success. However, much less has been researched regarding the relationship of self-esteem to their academic success. Adler and Adler (1991) observed that the families of their subjects (male basketball players) could be an active force in keeping these college student-athletes involved academically, although they also noted that the subject athletes' families frequently experienced difficulties in maintaining contact with their sons due to distance and cost factors.

Studies by Landers (1978) and Dowell et al. (1972) reported that athletes tended not to develop the intellectual self-concepts they needed in college. Leach and Conners (1984) suggested that for many black athletes, their sports achievement is their only source of self-esteem. Edwards (1973) noted similarly that for blacks, athletic achievement may be a function of self-esteem because of the high status given sports achievement in the black community.

Ibrahim and Morrison (1976) however, studied the self-concepts of both high school and college athletes to their nonathlete peers. Athletes in general had below average self-concepts, but male college athletes did not differ significantly from their nonathlete counterpart.

Adler and Adler (1991) noted from their field observations that a student-athlete's self-concepts seemed to be built on the collective behavior of their team rather than their individual attributes. They suggested that this orientation was probably influenced both by their own identification and that of others as team members. With the "glorified self" of team membership and athletic successes goes a lack of future orientation according to Adler and Adler. Thus they conclude that student-athletes who come to college to expand their horizons often end up narrowing them.

Personality Characteristics

Cooper (1968) reviewed personality factors associated with studies of college student-athletes. He found evidence supporting characteristics of motivation to achieve assent (upward mobility), emotional stability, and greater social adjustment in these studies. He further suggested in these studies that effects of team membership might be different from the influence of athletic participation in these studies.

Schurr et al. (1977) using the MBTI found in their study that no single personality profile distinguished all athletes from nonathletes, however, when personality profiles were cataloged by sports type, a number of differences were observed. Team sport athletes were observed to have less abstract reasoning, be more introverted, be more dependent, and have less ego strength.

Several later studies have examined personality characteristics of athletes. Omizo et al. (1979) compared Olympic athletes with undergraduate education majors. They found the 16PF (a personality test commonly used to assess athletes) to be a moderately valid in discriminating between these groups. They found athletes to be more reserved, traditional, conservative, critical, aloof, and intellectual than education majors (who were found to be more liberal and easy-going). The athletes were found to be more aggressive, stubborn, tender-minded, self-sufficient, and tense. The undergraduate education majors, by contrast were more humble, mild, tough-minded, adaptable, group-dependent and relaxed.

Aamondt et al. (1982) compared the personality profiles of 51 nonathletes with football, track and baseball team members. They found college football and track team members were more dominant and less patient than their nonathlete peers.

Schurr et al. (1984) examined the characteristics of football players at a midwestern university in the NCAA Division I-A. The MBTI was used to see if it would discriminate successful and unsuccessful players. They found that overall the most successful football players tended to prefer thinking (T). Successful lineman, however, preferred sensing (S) and successful offensive backs preferred intuition (N) while defensive backs tended to be introverted (I).

Although no studies were found that directly compared the personality characteristics of athletes with their level of academic success, Schurr et al. (1984) developed, as a result of their study using the MBTI, identifying characteristics of each preference that might enhance athletic success that may have relevance to general learning strengths as well (see Appendix B, Table B-1 for these descriptors).

Social Conditions and Student Athletes' Academic Success

As with college students in general, a review of the literature on college athletes suggests that similar social conditions also influence college athletes' academic success in college. Research in this area is discussed below (see also Appendix A, Table A-4).

Peer Support

The "dumb jock" label is not aided by this lack of social contact with nonathletic college peers according to Adler and Adler (1991). Pressure from athletic peers not to study is also a contributing factor according to Adler and Adler's field-study observations. Then there is the pressure of the games themselves including making errors in front of thousands of fans, mostly their nonathlete college peers.

Living in athletic dorms creates further social isolation of student-athletes from their nonathlete college peers. Adler and Adler (1991) viewed all aspects of the student-athlete environment they observed as "directed within the athletic milieu" (p. 177). Living with other athletes, eating meals together, playing and traveling together usually resulted in athletes finding social support primarily among their fellow athletes. Also, athletes reported knowing few regular students. Dormmates become both surrogate family and "cellmates"; coaches replaced parents in Adler and Adler's (1991) observations.

Leach and Conners (1984) suggested that peer counseling offers an outlet for student-athlete adjustment to deal with personal and social adjustment. Adler and Adler (1991) observed, however, that informal peer support systems already exist within the athletic peer culture.

Faculty Support

Primary faculty contacts for student-athletes as reported by Adler and Adler (1991) were members of the athletic department. Coaches and their staffs planned athletes schedules and registered them for classes. They further noted that these classes were often large lecture classes which limited opportunities for interaction with faculty during class (Adler & Adler, 1991) as well as limited their opportunities for involvement in learning (Rhatigan, 1984; Sparent, 1988).

Coaches also were observed by several researchers to play a parent role. The student-athletes contractual obligations combined with the knowledge that the coach's job security might rest on the outcome of the game added further pressure to prioritizing athletic performance over academics. Athletic training and playing commitments also posed time constraints on when athletes could make contacts with nonathletic faculty (Adler & Adler, 1991; Rhatigan, 1984).

Institutional Support

Ervin et al. (1985) were critical of what he viewed as a difference in the institutional goal of colleges with respect to student-athletes. They suggested that the goal of the higher education institution in selecting students for their program was to select those students who could most benefit from the institution, while the goal of the institution in selecting student-athletes for admission was how much the student could benefit the institution.

Adler and Adler (1991) point out several unique institutional influences on the student-athletes including a highly control athletic milieu and athletic dormitories which segregated athletes from their nonathletic peers.

Athletes, through their sports participation, are in many ways more involved within their institution than many of their nonathlete peers. But the nature of their extra curricular participation often keeps them from participating in a broader range of social activities on campus especially those involving leadership roles (Rhatigan, 1984). Their lack of ability to transfer skills they developed through athletic participation may serve to limit their social development (Adler & Adler, 1991; Hall, 1985; Hanks & Eckland, 1976; Landers et al., 1978; Sowa & Gressard, 1987).

Community Support

Adler and Adler (1991) discussed the unique position in which athletes find themselves with respect to the community. If they are successful they are both institutional and community heroes, however their errors on the playing field are also evident to all.

Sedlacek and Adams-Gaston (1989) found support for the importance of community among college student-athletes as well as among minority and ethnic groups. The sub-scale for community support on their questionnaire was one of the scales they found significantly related to persistence among both black and white athletes participating in a range of intercollegiate sports.

Sports Participation and Academic Success

Issues relating to the influence of sports participation on academic success are also evident in the literature. Literature relating to the influences of personal and social conditions as well as precollege academic factors on students' sports involvement are discussed below (see also Appendix A, Table A-4).

Personal and Social Conditions Influenced by Sports Participation

Rehberg' and Schafer's (1968) research indicated that there were five intervening variables between athletic participation and academic achievement: (1) association with high achieving peers; (2) transfer of achievement value from sports to the classroom; (3) increased self-esteem that increases aspirations in other areas; (4) pressure, both internal and external, to present a congruent image of success in all areas of life; and (5) more scholastic and career guidance from significant adults.

There are many aspects of sports participation believed to positively contribute to the social development of athletes. Edwards (1973) noted the following contributions developing good character and fortitude; developing a values of loyalty, altruism and self-control; providing preparation for life; and developing religiosity and patriotism.

On two separate occasions, however, Stevenson (1974, 1985) reviewed the literature on the socialization effects of participation in sports in three areas: psychological effects, behavioral effects and attitudinal effects. He found no evidence to verify that participation in sports resulted in any socialization effects in either review. Ryan's (1989) study findings contradicted these results and found that athletic involvement was positively associated with the development of interpersonal skills and leadership abilities.

Warfield (1983) indicated from his research that black athletes, more so than white athletes, seek to enter college without being either academically or socially ready and college failure is often the result.

He concludes that race appears to influence the lack of social change (using measures of social mobility) he found among black athletes.

Sowa and Gressard (1983) explored the relationship between participation in intercollegiate athletics and achievement of developmental tasks. They found athletes scored significantly lower than nonathletes where differences were found. The areas of significant differences were in (1) developing educational plans; (2) developing career plans; and (3) developing mature relationships. The authors suggested that the "coachability" of athletes may cause the athlete to have more difficulty in developing individual purpose, forming well-defined goals and gaining satisfaction from educational experiences. Blann (1985) came to a similar conclusion with respect to the development of academic and career goals especially among freshman and sophomore student-athletes and players from low socioeconomic back grounds.

Rhatigan (1984), as noted earlier, also described some of the social conditions which may negatively impact on the level of academic success achieved by the student-athlete. First there is the time commitment of athletic participation. Not only does this reduce available study time, but it also leaves little time for extracurricular activities (social clubs and other college leadership activities) or the informal contact with faculty needed for social development. These studies lend support to observations by Hurley and Cunningham (1984) as well as Marcia (1980) have suggested that athletic participation artificially delays adulthood.

Academic Conditions Influenced by Sports Participation

Numbers of studies have been done that support both the positive and negative influence of athletics on academic success (Adler & Adler, 1985, 1991; Ballantine, 1981; Erwin et al., 1985; Hanks & Erkland 1976; Purdy et al., 1982; Rehberg & Schaefer, 1968; Roper & Snow, 1976; Ryan, 1990; Sedlacek & Adams-Gaston, 1989; Spady, 1970; Warfield, 1983). Some of these studies are noted in this section.

Roper and Snow (1976) were among the early researchers to present strong evidence that college intercollegiate athletics and academic excellence were not mutually beneficial. Purdy (1981) found black athletes and athletes in income-producing sports had somewhat lower GPAs than other categories of athletes. Likewise, Cramer (1968) found that revenue-producing sport athletes were more adversely affected in their academic performance that other athlete groups.

Hanks and Eckland (1976) conducted a longitudinal study of the role of educational activities and educational success using a national sample of college students. This study distinguished between intercollegiate athletics and participation in other types of athletic activities. Intercollegiate athletics was found to have a very weak effect, while other types of extracurricular athletic participation had much stronger effects on academic performance and mediated the effects of socioeconomic background and academic achievement.

Underwood (1980) discussed the fact that many student-athletes choose to "major in eligibility." They may go through their four years of athletic eligibility and be no closer to a degree than a lower-division student. Edwards (1983) further noted that 75% of black student athletes who do graduate are forced into majors generally held in low repute and thus will end up with no real job qualifications.

Warfield (1983), after examining the relationship between sports participation and academic success, concluded that only when sociopersonal and cultural variables were considered did sport participation impact on academic success. According to Leach and Connors (1984) the athletes' sports success often drew them away from the less rewarding experiences of the classroom. They may have learned that if they play well on the field little else is expected of them, setting up unhealthy patterns that become a part of their self-concept (Haughtey, 1982).

Cramer (1982) noted that raising academic eligibility rules would unfairly discriminate against blacks and noted that SAT scores for blacks average 722. In predominantly black colleges it is even lower (707). Thus, according to Cramer, black athletes must be nearer their norm than white athletes to be accepted as a student-athlete.

Edwards (1983), a black educator and former college and Olympic athlete, lamented that the only consistent model for black success is the black athlete, yet at the time of his writing only about 2,400 black Americans could be said to be making a living in professional athletics. Edwards, therefore, supported higher academic standards for athletes arguing that it would stimulate a higher educational standard for all students.

Ervin et al. (1985), in a study of students-athletes in a developmental program for underprepared freshman, concluded that those athletes with SAT scores below 700 had little chance to succeed. He viewed the revenue-producing goals of the athletic department as dynamically opposed to the goals of academia.

Purdy et al. (1982) studied over 2000 athletes at a major western university over a 10-year period and found that athletes achieved less academically in college compared to the general student population. In their study blacks, athletic scholarship-holders and athletes in the major revenue-producing sports of football and basketball were found to have the poorest performance and academic potential.

From their field-study observations of college basketball players, Adler and Adler (1991) noted that athletes were often discouraged academically due to early negative experiences in the college classroom. Sparent (1988) suggested that different learning strategies were needed if athletes are to be able to have positive learning experiences in the college classroom. She suggested using peer group responses, role playing, brainstorming, and problem solving teaching strategies with athletes. She proposed encouraging students to see this diversity and move away from their more rigid views of the world and toward development of a stronger sense of responsibility and ownership of their larger educational experience.

Sparent (1988) further suggested that classroom teachers' nonauthoritarian, nondirective approach might be a difficult role for athletes to accept because it contrasts with their perception of their coaches. Sparent noted in her observations that there was often discomfort in the classroom between athletes and nonathletes which made athletes hesitant to share their beliefs with students who had a different world perspective from theirs. According to Sparent, student-athletes preferred more specifically measurable, clear cut and practice-related skills from which results could be seen.

Sedlacek and Adams-Gaston (1989) found that certain noncognitive variables (a strong support person, community involvement and a positive self-concept) as measured by the Non-Cognitive Questionnaire were predictive of academic success of student-athletes'(football and basketball players) first semester grades, while SAT scores were nonpredictive. Sedlacek and Adams-Gaston suggested as a result of their research that student-athletes should be viewed as nontraditional (ethnic and racial minorities and older age) students since the NCQ predicted their success much as it predicted other nontraditional student groups tested.

Conclusions

This review of the literature has focused on personal and social conditions relating to the academic success of college students and its specific application to the success of the college student-athlete. The results of this review have led the researcher to conclude that most of the factors contributing to these conditions, based on Tinto's model of dropout prevention, may be relevant to both college-student athletes and their nonathletic peers, but that the breadth of personal and social factors relating to academic success suggested by this review have not been adequately examined with respect to scholarship athletes' academic success.

There was evidence to suggest that male, team-sport college student-athletes, (especially black athletes, those on athletic scholarships and those in income-producing sports such as football and basketball) may be the most academically at-risk and thus most in need of research that might lead to intervention strategies. Therefore, an assessment of the personal and social factors relating to the academic success of scholarship athletes represents a first step in addressing the interventions that may be needed to enhance conditions for academic success of such student-athletes. In addition, they can provide a further test of the application of Tinto's theoretical model of dropout prevention for this group of students, and may suggest areas of further research for other academically at-risk students.

CHAPTER III
METHODOLOGY

Design

Purpose of the Study

The purpose of this study was to examine the personal and social conditions described in Tinto's (1987) theoretical model of dropout prevention that are related to three defined measures of academic success: College GPA (CGPA), Mathematics and English GPA (MEGPA) and Percentage of Credits Passed (PCTCR). Male scholarship athletes in the income-producing college sports of football and basketball (hereafter known as scholarship athletes) were used as the subjects for this study. The study had two major objectives. The first objective was to provide a test of Tinto's theory of dropout prevention within this special group. The second objective was to provide information for higher education administrators on how these personal and social conditions may be related to the three dependent measures of academic success for the scholarship athlete.

Two instruments designed to obtain information on these personal and social factors, the Myers-Briggs Type Indicator (MBTI) and the Non-Cognitive Questionnaire (NCQ), were used to determine the relationship between these factors and the scholarship athletes' level of academic success. Linear regression, analysis of variance (ANOVA), and chi-square were the statistical methods chosen to analyze the data obtained in this study. The level of significance designated for all methods used was .05.

Research Question and Hypotheses

In order to accomplish the purpose of this study the following research question was established:

> What is the relationship between the level of academic success of income-producing, scholarship athletes as measured by their (1) mean grades in all college courses (College GPA); in specific core course areas (Mathematics and English GPA); and their continued academic progress toward graduation (Percentage of Credits Passed); (2) selected personal background factors (race, socioeconomic status); (3) precollege academic factors (high school GPA and SAT/ACT scores); (4) their learning styles (Myers-Briggs Type Indicator), and (5) other non-cognitive variables (Non-Cognitive Questionnaire) suggested in Tinto's model of dropout prevention?

In order to investigate the research question several hypotheses were developed as follows:

Hypothesis #1

> There is no relationship between each of the measures of academic success of scholarship athletes and the personal background factors of athletes' race and their family socioeconomic background (using parents' occupation from the Non-Cognitive Questionnaire).

Hypothesis #2

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores).

Hypothesis #3a

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores) and their continuous MBTI measures.

Hypothesis #3b

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores) and their dichotomous MBTI measures.

Hypothesis #4a

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their continuous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person and (4) Demonstrated Community Service.

Hypothesis #4b

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their dichotomous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person and (4) Demonstrated Community Service.

Hypothesis #5

There is no relationship between any of the three defined measures of academic success and MBTI type measures.

Hypothesis #6a

Type distribution of scholarship athletes will not differ significantly from type distribution of male University of Florida students (class of 1971).

Hypothesis #6b

Type distribution of scholarship athletes will not differ significantly from type distribution of college students combining all male college student samples in the MBTI Atlas of Types.

Methods of Analysis

ANOVAs are typically used to compare means of two or more groups. For Hypothesis #1, a two-way ANOVA was used to compare race and SES with each of the dependent variables (College GPA, Mathematics and English GPA and Percentage of Credits Passed).

Linear regression is typically used to make predictions about a variable from information about other variables. For the variables specified in Hypotheses #2, #3 and #4 linear equations were developed. A general linear model (GLM) procedure was used for the analysis of these hypotheses.

MBTI continuous and dichotomous scores were included in separate equations. For Hypothesis #5, MBTI data were analyzed using three standard methods of Type analysis. In Method I, *t*-tests were performed to compare each preference dichotomy (E or I, S or N, T or F, J or P) with each of the dependent variables. In Method II, dependent variable means scores were compiled using the GLM procedures to obtain *F*-tests for each of the 16 types and conventional type groupings. The results of the analysis of Method I and II were displayed using an MBTI Means Comparison Table for each dependent variable.

In the Method III approach for analysis of Hypothesis #5, Pearson Product Moment Correlations were obtained comparing the continuous scores for each of the preferences (EI, SN, TF, and JP) with each dependent variable. A separate table was used to display these results.

Chi-square is normally used to compare relationships between categorical variables. For Hypothesis 6a and 6b this analysis procedure was used. The Selection Ratio Type Table (SRTT) program was used to determine whether or not the study sample was similar to or different from a single college and a composite sample of students who were administered the MBTI from the MBTI Atlas of Type data bank.

Instruments

Two instruments were used to assess the personal and social factors relating to the success of income-producing scholarship athletes. The Myers-Briggs Type Indicator (MBTI) was used to assess the personality characteristics that affect the learning style of these scholarship athletes. The Non-Cognitive Questionnaire (NCQ) (see

Appendix C) was used to identify demographic and socioeconomic characteristics and selected personal and social factors found to be related to persistence and graduation among nontraditional student groups.

The Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI), Form F (research form) is a self-reporting personality indicator that has 166 forced choice items and takes about 50 minutes to complete. It is scored on a continuum using four (4) preference components. The MBTI has been shown to be a useful instrument in identifying personality characteristics of academically at-risk college student groups (Jensen, 1987; Kalsbeek, 1987; Nisbit et al., 1981, 1982; Schurr & Ruble, 1986).

Several advantages of the MBTI make it especially suitable for the student-athlete population. The advantages of this instrument include: relative lack of racial, sexual, educational and social background bias, and a readability level capable of being handled by academically at-risk populations. Directions for the indicator are clear and easy to understand. It is a low-anxiety-level instrument that focuses on the strengths of the individual and thus enhances acceptance of the results. Learning style insights gained from the test have practical application (Nisbit et al., 1981).

The basic MBTI score is a preference score. It consists of a letter showing the direction of preference and a number showing how consistently the preference is reported (e.g., E 29, S 19, T 3, P 10). Jung's type theory assumes dichotomous preferences. For example, the choice of S or N is a choice of one path or another. For this reason Myers considered that the major task of the MBTI was to assign letters for a preference and their combination into patterns for the 16 types. Myers recognized, however, that researchers would not want to "throw away data" provided by the numerical preference scores and that many would reject the theory of dichotomies, and would treat the data as an underlying continuum. Myers' method for calculating continuous scores was to set the midpoint of the scale at 100 and to subtract the numerical portion of the preference score if the direction of the preference is E, S, T, or J or to add the scores for the opposite preferences, I, N, F, or P. Thus the continuous score for a preference of E 15 would be 85 and for I 15 would be 115.

Reliability of the MBTI has been judged satisfactory in two previous reviews (Carlyn, 1977; Myers & McCaulley, 1985). Internal consistencies reported in the MBTI Manual for traditional-age college students are as follows: EI .83; SN .82; TF .81; and JP .86. Myers (1962) observed in her original work that underachieving students answered the MBTI with lower consistency. Reliabilities are lower for underachieving high school students while high-achieving students had reliabilities as high as college students. University of Florida freshman males in 1971, when divided by quartiles for aptitude, had the following ranges of internal consistency correlations: EI .75-.83; SN .83-.87; TF .83-.87; and JP .85-.87.

Split-half reliability on samples of several different colleges for the four scales varied from .82 to .88 for males. Test-retest reliability for Form F from several male college samples ranged as follows: .76-.84 for EI; .84-.88 for SN, .75-.79 for TF; and .75-.82 for JP for continuous scores (with intervals from five weeks to 14-16 months). Of the four preference scales, the TF-scale tends to be lower than reliabilities on other scales. The MBTI Manual attributes this to the fact that the TF-scale has more word pairs which may provide more difficult discrimination, and to the fact that in our changing society it is more difficult to develop decision-making skills with which the TF preference is concerned.

Validity studies have been reported on all scales. Most of the validity studies have been done with college populations. Correlations of MBTI continuous scores with many other personality instruments have been reported (Myers & McCaulley, 1985, p. 182, Table 11.1). Some of these instruments include the Adjective Check test, the California Psychological Inventory, Edwards Personality Preference Survey, the Minnesota Multiphasic Personality Inventory (MMPI), the Sixteen Personality Factor Questionnaire (16 PF) and the Kale Levy Style Inventory. The convention for reporting MBTI correlations is as follows: positive correlations are associated with I, N, F and P; negative correlations are associated with the E, S, T and J scores. The MBTI manual reports a range of correlation scores from r .75 to r .40 for positive correlation scores and r -.77 to r -.40 for negative correlation scores. Correlations are somewhat limited in their evidence for construct validity of the 16 types because they only compare the four preferences individually and not as a total entity (Myers & McCaulley, 1985).

Finally, a data bank of over half a million cases is available for comparisons. This sample is large enough to produce stable reliability for males and females from 15-60 and educational levels from dropouts to college graduates (Macdaid, 1987).

McCaulley (1974) suggested that probably the MBTI's "greatest value in education may be as a tool for preventing difficulties of students, for improving and individualizing their education and for showing them how to gain more effective direction over their own lives" (p. 36).

Non-Cognitive Questionnaire

The Non-Cognitive Questionnaire (Tracey & Sedlacek, 1984) is a 28-item instrument designed for use with college students. In addition to basic demographic information (age, race, gender, and parents' occupation) it contains three open-ended questions and 18 Likert scale questions. This instrument measures several personal and social variables designed to predict persistence of high-risk groups (especially racial and ethnic minorities and older students). In addition, it has also been used with athletes (Sedlacek & Adams-Gaston, 1989). The questionnaire contains eight subscales as follows: positive self-concept; realistic self-appraisal; understanding and ability to deal with racism; preference for long-range goals; availability of a strong support system; successful leadership experience; demonstrated community service; and knowledge acquired in a field.

In a study conducted to examine the reliability, construct validity and predictive validity of the NCQ, this test was found to have adequate test-retest reliability and construct validity. Test-retest reliability using a 2-week retest ranged from .70 to .94 with a median of .85. Interrater reliability rates for the three open-ended questions ranged from .83 to .98 depending on the question (goals, past accomplishments, and extra-curricular and leadership activities) and the associated rating criteria as follows: time length for goal (.83); degree of goal relationship to academia (.83); for the second item, degree of difficulty of accomplishment (.88); and for the last item, number of activities (1.00), leadership exhibited (.89), relationship to academia (.98) and community involvement (.94) (Tracey & Sedlacek, 1984).

The NCQ significantly added to predicted grades for both black and white subsamples and predicted persistence for black subsamples. White subsamples were not analyzed in Tracey and Sedlacek's (1984) study, but were said to show a fairly similar substructure. In all the predictive validity analysis done, the NCQ items were either very similar to or more highly predictive than their SAT scores.

Additional identifying information regarding sport played, state of residence, and a comments section were added to the questionnaire, but the original questions were not changed except for those questions where reference to the student's college required that the institution name be inserted. (See Appendix C for copy of NCQ including additional questions.)

Population and Sample

The target population of this study was scholarship football and basketball athletes attending a major southeastern university. All athletes meeting these criteria in the selected university were used in this study. Student athletes in the study represented 14 different states. Fifty-five percent (55%) of the athletes were minority. Minority representation is similar to that of other NCAA Division I-A teams nationally (Coakley, 1985).

Procedures

Collection of Data

A total of 70 scholarship football and basketball athletes from a university in the NCAA Southeastern Conference were obtained for this study. The instruments were administered individually with the students-athletes. Administration of the tests was supervised by the athletic counseling staff.

Analysis of Data

The results of the MBTI administration were computer scored by the Center for the Application of Psychological Type (CAPT). The researcher was provided with data in a computer-readable form that allowed for analysis using the Selection Ratio Type Table (SRTT) software. University records were used to obtain grades (high school GPAs, specific college core course area grades, measures of academic progress and SAT/ACT scores).

The SRTT statistical program allowed for the production of 44 separate sets of analysis on a one-page format for each variable considered. Using this type of analysis, when observed frequencies are the same the selection ratio is 1.0. The selection ratio increases as the observed frequencies become larger; it grows smaller as the observed frequencies decrease.

The Likert scale items on the Non-Cognitive questionnaire were computer scored. Two independent raters were used to score the open-ended questions based on the scoring criteria. An average of the raters' scores was used in determining the score used. SAS linear regression procedures were used to analyze the continuous scores on both the MBTI and the NCQ. Once all the scores on the NCQ were obtained, a master data set was created by adding to the MBTI data the demographics and subscale scores on the NCQ and the academic data. Any significant factor(s) in Hypothesis #1 were included in the analysis of Hypothesis #2, #3, and #4.

Treatment Provisions for Scholarship Athletes

All the scholarship athletes participating in the study were given the opportunity to receive the results of the instruments administered after scoring was completed. Further, athletes were offered the opportunity to have the results of the MBTI and the other instruments administered interpreted for them by a qualified professional.

Limitations of the Study

Since only income-producing sports were involved, the study was limited to male, team-sport athletes in basketball and football and therefore did not include any athletes who only participate in other team or individual sports. The study was also limited by the voluntary participation of the student-athletes involved in the study.

Delimitations of the Study

The study was delimited to include only sports-scholarship athletes in a university setting with a major college team sports program and may not be generalizable to female scholarship athletes in any size college setting or male scholarship athletes in medium-size or smaller college settings.

CHAPTER IV
ANALYSIS OF RESULTS

The purpose of this study was to examine the personal and social conditions described in Tinto's (1987) theoretical model of dropout prevention which are related to three defined measures of academic success: College GPA (CGPA), Mathematics and English GPA (MEGPA) and Percentage of Credits Passed (PCTCR). Male scholarship athletes in the income-producing college sports of football and basketball (hereinafter known as scholarship athletes) were used as the subjects for this study. The study had two major objectives. The first objective was to provide a test of Tinto's theory of dropout prevention within this special group. The second objective was to provide information for higher education administrators on how these personal and social conditions may be related to the three dependent measures of academic success for the scholarship athlete.

Two instruments, the Myers-Briggs Type Indicator (MBTI) and the Non-Cognitive Questionnaire (NCQ) were administered to scholarship athletes by the athletic counseling staff of the university they attended during the Spring 1991 semester. Identification codes were used on both instrument and anonymity of individual results was assured. Information regarding the individual results was made available to the athletes using identification numbers, while data analysis was conducted as outlined in the previous chapter.

Tinto's theoretical model suggests that personal and social conditions, internal and external factors, as well as academic factors are related to students' academic success in college. The personal conditions examined in this study were race, socioeconomic status (SES), self-concept, goals and learning styles. The social conditions were support and community service. Two precollege measures of academic success: High School GPA (HSGPA) and College GPA (CGPA) were used as the independent academic variables. Data for the academic variables were obtained from university records. The Myers-Briggs Type Indicator was used to obtain information about the learning styles of the scholarship athletes. The Non-Cognitive Questionnaire was used to measure the remaining factors using the Self-Concept, Goals, Support, and Community Service subscales.

Sample Demographics

Seventy (70) scholarship athletes in income-producing team sports participated in this study. The information in this section describes the scholarship athlete characteristics.

All of the subjects who participated in this study were in residence on campus at the time the study was conducted. Because of the much smaller number of team members in the basketball program the percentage of basketball players represented is much smaller than the percentage of football players (Table 4-1).

Table 4-1: Distribution by Sport for White and Non-White Scholarship Athletes

Race	Football		Basketball		Total	
	N	%	N	%	N	%
White	25	43.1	7	58.3	32	45.7
Non-White	33	56.9	5	41.7	38	54.3
TOTAL	58	100.0	12	100.0	70	100.0

The scholarship athletes in this study sample were all within the traditional age range (18-22 years) for college students although four of the athletes did not report their age (Table 4-2). Racial distribution overall between white and non-white students was relatively equal with white students being in the minority (45.7%). The majority of the basketball players (58.3%) were white, while the majority of the football players (56.9%) were non-white.

Table 4-2: Distribution by Age for White and Non-White Athletes

Age	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
18	3	9.4	4	10.5	7	10.0
19	10	31.2	8	21.1	18	25.7
20	6	18.8	12	31.6	18	25.7
21	10	31.2	6	15.8	16	22.9
22	2	6.3	5	13.2	7	10.0
Not given	1	3.1	3	7.9	4	5.7
TOTAL	32	100.0	38	100.0	70	100.0

According to the subjects' self-reports (Table 4-4), there were equal numbers of players (19) who had been in school one, two or three years. This information correlates quite closely with the freshman, sophomore and junior status of these players as reported on university records obtained through the athletic department (Table 4-3). These data suggest that most of the scholarship athletes were making expected progress in course completion although it does not necessarily show that they were making progress toward a specific degree. Distribution of these data for both white and non-white scholarship athletes was similar.

Table 4-3: Distribution by College Class of White and Non-White Scholarship Athletes

Age	Race					
	White		Non-white		Total	
	N	%	N	%	N	%
Freshman	9	28.1	11	28.9	20	28.6
Sophomore	8	25.0	10	26.3	18	25.7
Junior	11	34.4	10	26.3	21	20.0
Senior	4	12.5	7	18.4	11	15.7
TOTAL	32	100.0	38	100.0	70	100.0

Table 4-4: Distribution by Year in College for White and Non-White Scholarship Athletes

Age	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
1st	8	25.0	11	28.9	19	27.2
2nd	10	31.3	9	23.7	19	27.2
3rd	8	25.0	11	28.9	19	27.2
4th	4	12.5	3	7.9	7	10.0
5th	1	3.1	2	5.3	3	4.2
Not reported	1	3.1	2	5.3	3	4.2
TOTAL	32	100.0	38	100.0	70	100.0

Over seventy percent (71.4%) of the scholarship athletes were from the southeastern state in which the study was conducted. The majority of the out-of-state scholarship athletes (15.7%) were either from other southern or midwestern states. Just over 14% of the scholarship athletes were from areas outside the south or midwest states or did not report their home state (Table 4-5). Distributions by race were similar.

Table 4-5: Distribution by Home State/Area for White and Non-White Scholarship Athletes

Home State/Area	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
Home State	24	75.0	26	68.4	50	71.4
Other Southern State	5	15.6	4	10.5	9	12.9
Midwestern State	1	3.1	2	5.3	3	4.3
Other (including foreign)	2	6.3	3	7.9	5	7.1
Unreported	0	0.0	3	7.9	3	4.3
TOTAL	32	100.0	38	100.0	70	100.0

Family Socioeconomic Factors

The parents' occupation categories used to obtain the socioeconomic factor were first categorized on a five-point scale according to the minimum level of education needed to be employed in the occupational field (Table 4-6). The Dictionary of Occupational Titles (U.S. Department of Labor, 1991) was used as a reference in determining minimum educational level of the parents' occupations given on the Non-Cognitive Questionnaire. The categories for each subjects' parents were then added together and collapsed into four categories by combining the two highest level occupation categories (Table 4-7) to produce the family socioeconomic status (SES) variable used in the analysis for this study. The collapsing of the two highest categories was done because of the difficulty in defining the most appropriate level for some of the occupations listed at these levels on the Non-Cognitive Questionnaire. Unlike what might be expected in a more traditional college student population, there was relatively similar distribution by socioeconomic status (SES) of the white and non-white group (Table 4-8).

Table 4-6: Parents' Occupation Categories for White and Non-White Scholarship Athletes

Occupation Categories	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
(0) Unemployed/absent						
Mother	9	29.8	12	31.6	21	30.4
Father	3	9.7	13	34.2	16	23.2
(1) Unskilled						
Mother	1	3.2	2	5.3	3	4.3
Father	1	3.2	2	5.3	3	4.3
(2) Skilled						
Mother	10	32.3	8	21.1	18	26.1
Father	6	19.4	11	28.9	17	24.6
(3) Professional/managerial						
Mother	11	35.5	14	36.8	25	36.2
Father	14	45.2	8	21.1	22	31.9
(4) High-level professional						
Mother	0	0.0	2	5.3	2	2.9
Father	7	22.6	4	10.5	11	15.9

* One missing observation due to incomplete questionnaire.

Table 4-7: Family Socioeconomic Status of White and Non-White Scholarship Athletes (SES)

SES Category	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
#1 (Mother's Occ. + Father's Occ. = 0 or 1)	2	6.5	9	23.7	11	15.9
#2 (Mother's Occ. + Father's Occ. = 2 or 3)	12	38.7	16	42.1	28	40.6
#3 (Mother's Occ. + Father's Occ. = 4 or 5)	6	19.4	4	10.5	10	14.5
#4 (Mother's Occ. + Father's Occ. = > 5)	11	35.5	9	23.7	20	29.0
TOTAL	38	100.0	31	100.0	69*	100.0

* One subject did not report parent occupation information.

Table 4-8: Socioeconomic Status of White and Non-White Scholarship Athletes

Race	N	Mean	SD
White	31	2.83	1.00
Non-White	38	2.34	1.09

Precollege Academic Factors

In addition to race and SES, personal background factors were also included two precollege academic measures. These measures were: (1) High School GPA (HSGPA) and (2) SAT or ACT scores converted to z-scores to produce a common measure of these two tests (Table 4-13). Scores for these precollege academic variables are shown below in Tables 4-9 and 4-10.

Table 4-9: Distribution of High School GPA for White and Non-White Scholarship Athletes

HSGPA*	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
1.5 - 1.9	2	7.4	13	36.1	15	23.8
2.0 - 2.4	5	18.5	13	36.1	18	28.6
2.5 - 2.9	8	29.7	8	22.2	16	25.4
3.0 - 3.4	3	11.1	2	5.6	5	5.7
3.5 & above	9	33.3	0	0.0	9	14.3

* HSGPAs not available on 7 students due to status as college transfers who were not required to submit high school transcripts or foreign students whose transcripts were not comparable.

Table 4-10: Comparison of Scholarship Athlete Aptitude Test Scores with National Norms

Aptitude Test Scores	N	Mean Score	SD	1991 National Mean	SD
SAT Scores					
SAT Math Scores	42	487	101.3	466	100
SAT Verbal Score	42	390	78.6	423	100
SAT Total Score*	42	877	161.8	889	
ACT Score					
ACT Total Score	27	17.6	3.9	20.6	4.6

* The SAT Verbal and Mathematical Scores were added together and then combined with the ACT Total score to obtain the z-score used in the analysis involving aptitude scores.

CLAST (College Level Academic Skills Test) scores were also obtained in this study, but results were not included in the analysis of the hypotheses. The reason was that only 74% of the student athletes had taken the test since it is not required until students have earned

60 credit hours. The scores on these tests are shown in Appendix E, Table E-1).

Almost one-fourth of the scholarship athletes had high school GPAs below 2.0 on a 4-point scale. Over half of the team had less than a 2.5 high school GPA (Table 4-9). Twenty percent (20%) of the athletes in this study, however, had a 3.5 or better high school GPA (HSGPA). There were obvious differences in the white and non-white sample in the upper and lower end of the high school GPA scores. Thirty-three percent (33%) of the white athletes earned high school GPAs averaging 3.5 or above; no non-white athletes achieved this record.

High school grades were not reported on seven athletes either because they were transfers from other colleges or because they were from other countries. Students who transfer are not required to submit high school transcripts to be admitted. Instead their college transcripts may be used. Foreign students' high school records were not comparable.

Table 4-11: Mean Aptitude Test Scores for White and Non-White Scholarship Athletes

Aptitude Test Scores		White			Non-White	
	N	Mean	SD	N	Mean	SD
SAT Scores						
SAT Math Scores	19	534	95	23	432	69
SAT Verbal Score	19	437	62	23	352	70
SAT Total Score	19	990	134	23	785	118
ACT Score						
ACT Total Score	12	17.7	5.2	13	17.9	2.4

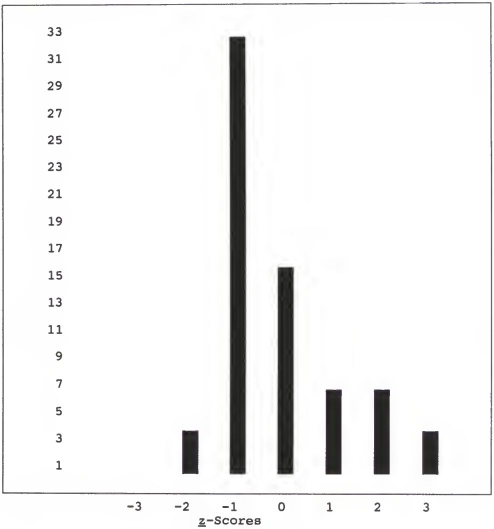
Scholarship athletes' scores on aptitude tests (either SAT or ACT) were below the current national mean for those taking this examination. SAT-Mathematics scores were closer to the national mean than verbal scores (Table 4-11). SAT scores were lower for non-white athletes but ACT scores were slightly higher for non-white students. Only 27 students reported ACT test scores, however.

To provide aptitude data for the sample as a whole, SAT/ACT total scores were converted to z-scores. The distribution is shown in Figure 4-1. The distribution for white and non-white students is shown in Table 4-12. The mean z-score was of the study sample was -.24. Among the white students, 55.2% were above the mean z-score for all students while and 13.9% of the non-white students received scores above this mean.

Table 4-12: Distribution of SAT/ACT z-Scores for White and Non-White Scholarship Athletes

z-Score	Race				Total	
	White		Non-White			
	N	%	N	%	N	%
-2.00 -2.99	2	6.9	1	2.8	3	4.6
-1.00 -1.99	11	37.9	21	58.3	32	49.2
0.00 -0.99	6	20.7	9	25.0	15	23.2
1.00 1.99	4	13.8	2	5.6	6	9.2
2.00 2.99	4	13.8	2	5.6	6	9.2
≥ 3.00	2	6.9	1	2.7	3	4.6
TOTALS	29	100.0	36	100.0	65*	100.0

* Unavailable SAT/ACT z-scores for 5 students.



* Unavailable SAT/ACT _z_-scores for 5 students.

Figure 4-1: Distribution of SAT/ACT _z_-Scores for Scholarship Athletes

Dependent Variable Data

Three dependent variables were used in this study. They were:

(1) College Grade Point Average (CGPA);

(2) Mathematics and English Grade Point Average (MEGPA); and

(3) Percentage of Credits Passed (PCTCR).

Tables 4-13 to 4-17 show the frequency levels, percentages, means and standard deviations of these dependent variables.

Table 4-13: Dependent Variable #1: College GPA (CGPA)

CGPA	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
< 1.5	0	0.0	0	0.0	0	0.0
1.5 - 1.9	3	9.4	10	26.3	13	18.6
2.0 - 2.4	11	34.4	18	47.4	29	41.5
2.5 - 2.9	10	31.2	9	23.7	19	21.7
3.0 - 3.4	4	12.5	1	2.6	5	7.1
3.5 & above	4	12.5	0	0.0	4	5.7
TOTAL	32	100.0	38	100.0	70	100.0

Table 4-14: Dependent Variable #2: Mathematics and English GPA (MEGPA)

MEGPA	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
< 1.5	2	6.3	2	5.4	4	5.8
1.5 - 1.9	2	6.3	3	8.1	5	7.3
2.0 - 2.4	8	25.0	11	29.7	19	27.5
2.5 - 2.9	8	25.0	12	32.5	20	29.0
3.0 - 3.4	6	18.7	7	18.9	13	18.8
3.5 & above	6	18.7	2	5.4	8	11.6
TOTAL	32	100.0	37	100.0	69*	100.0

* One student had not taken any English classes.

Table 4-15: Dependent Variable #3: Percentage of Credits Passed (PCTCR)

PCTCR	Race					
	White		Non-White		Total	
	N	%	N	%	N	%
<.80%	1	3.1	2	5.3	3	4.3
81 - 84%	0	0.0	4	10.5	4	5.7
85 - 89%	3	9.4	6	15.8	9	12.9
90 - 94%	7	21.9	9	23.7	16	22.3
95 - 99%	5	15.6	4	10.5	9	12.9
100%	16	50.0	13	34.2	29	41.4
TOTAL	32	100.0	38	100.0	70	100.0

Three dependent variables were chosen to measure different aspects of college success (Tables 4-13 to 4-15). Mathematics and English GPA (MEGPA) that represents more rigorous courses (Table 4-16) than overall GPA, show that Mathematics and English GPA (MEGPA) was lower than the mean College GPA (CGPA). The results when white and non-white athletes were examined separately were different. White scholarship athletes achieved higher mean Mathematics and English GPA (MEGPA) while non-white scholarship athletes had better mean College GPA (CGPA).

The mean Percentage of Credits passed (PCTCR) was 93% (Table 4-16). Although this percentage was surprisingly high for a group that has a low academic success rate, it should be remembered that the incentives for course completion are also high for scholarship athletes. Failure to maintain at least 12 credits per semester renders these scholarship athletes ineligible to play and at-risk of losing their scholarships.

Differences in overall achievement between white and non-white scholarship athletes were also noted (Table 4-16). Non-white scholarship athletes scored lower than white athletes on all three dependent measures.

Table 4-16: Means and Standard Deviations of Dependent Variables by White and Non-White Scholarship Athletes

Dependent Variable	Race								
		White			Non-White			Total	
	N	Mean	SD	N	Mean	SD	N	Mean	SD
College GPA (CGPA)	32	2.61	.60	38	2.18	.35	70	2.38	.52
Mathematics and English GPA (MEGPA)	32	2.68	.35	37	1.96	.66	69*	2.29	.78
Percent of Credits Passed (PCTCR)	32	96	7	38	92	9	70	93	8

* One student had not taken any English classes.

MBTI Data

The following tables show the results of the administration of the Myers-Briggs Type Indicator to the scholarship athletes in this study. Table 4-17 shows type table results. Table 4-18 shows the means of each type for the three dependent variables (College GPA, Mathematics and English GPA and Percentage of Credits Passed). Table 4-19 reflects the rankings of these dependent variables by type.

Table 4-17 shows ISTP type to be 24% of the total sample. ESTJ had the second highest concentration by type (17%). There were no athletes with INFP or INFJ types.

The thinking (T) preference had the highest concentration of athletes (85.71%). The sensing (S) preference had the next highest concentration (72.86%). Thus, the heaviest concentration of scholarship athletes fell in the sensing with thinking (ST) type group with 62.86% of the athletes in this study being this type group. The lowest concentration of athletes in this study was in the intuitive with feeling (NF) type (4.29%).

Table 4-18 shows means of each dependent variable by type. The types with the highest mean GPA were the ISFJ, ENFJ and the ENTJ. All three of these types had very low numbers (one or two subjects per cell). The types with the lowest mean College GPA (CGPA) were INTP and ISTP and ENTP.

Dependent mean rankings by MBTI type of the Mathematics and English GPA (MEGPA) variable shown in Table 4-19 were similar to the College GPA (CGPA) rankings with the same three types, ISFJ, ENTJ and ENFJ ranked highest. INTJ, INTP and ENTP athletes (normally high academic types) ranked lowest in Mathematics and English GPA in the study group. Using PCTCR (Percentage of Credits Passed), three TP-types, ISTPs, ESTPs and INTPs had the lowest rankings.

Table 4-17: MBTI Type Table of 70 Scholarship Athletes

ISTJ N = 8 % = 11.43 ■■■■■■■■	ISFJ N = 1 % = 1.43 ■	INFJ N = 0 % = 0.00	INTJ N = 2 % = 2.86 ■■
ISTP N = 17 % = 24.29 ■■■■■■■■■■ ■■■■■■■	ISFP N = 3 % = 4.29 ■■■	INFP N = 0 % = 0.00	INTP N = 5 % = 7.14 ■■■■■
ESTP N = 7 % = 10.00 ■■■■■■■	ESFP N = 2 % = 2.86 ■■	ENFP N = 1 % = 1.43 ■	ENTP N = 8 % = 11.43 ■■■■■■■■
ESTJ N = 12 % = 17.14 ■■■■■■■■■■ ■■	ESFJ N = 1 % = 1.43 ■	ENFJ N = 2 % = 2.86 ■■	ENTJ N= 1 % = 1.43 ■

	N	%
E	34	48.57
I	36	51.43
S	51	72.86
N	19	27.14
T	60	85.71
F	10	14.29
J	27	38.57
P	43	61.43
IJ	11	15.71
IP	25	35.71
EP	18	25.71
EJ	16	22.86
ST	44	62.86
SF	7	10.00
NF	3	4.29
NT	16	22.86
SJ	22	31.43
SP	29	41.43
NP	14	20.00
NJ	5	7.14
TJ	23	32.86
TP	37	52.86
FP	6	8.57
FJ	4	5.71
IN	7	10.00
EN	12	17.14
IS	29	41.43
ES	22	31.43
ET	28	40.00
EF	6	8.57
IF	4	5.71
IT	32	45.71
S dom	18	25.71
N dom	11	15.71
T dom	35	50.00
F dom	6	8.57

Note: ■ = one scholarship athlete.

Table 4-18: Average Dependent Variables by MBTI Type for 70 Scholarship Athletes

ISTJ N = 8 % = 11.43 1. 2.36 2. 2.06 3. 94	ISFJ N = 1 % = 1.43 1. 3.60 2. 3.60 3. 100	INFJ N = 0 % = 0.00 1. 0 2. 0 3. 0	INTJ N = 2 % = 2.86 1. 2.35 2. 1.75 3. 94
ISTP N = 17 % = 24.29 1. 2.24 2. 2.23 3. 89	ISFP N = 3 % = 4.29 1. 2.33 2. 2.50 3. 94	INFP N = 0 % = 0.00 1. 0 2. 0 3. 0	INTP N = 5 % = 7.14 1. 2.10 2. 2.02 3. 91
ESTP N = 7 % = 10.00 1. 2.34 2. 2.46 3. 93	ESFP N = 2 % = 2.86 1. 2.45 2. 2.25 3. 100	ENFP N = 1 % = 1.43 1. 2.50 2. 2.10 3. 94	ENTP N = 8 % = 11.43 1. 2.26 2. 2.05 3. 95
ESTJ N = 12 % = 17.14 1. 2.48 2. 2.43 3. 97	ESFJ N = 1 % = 1.43 1. 2.50 2. 2.80 3. 97	ENFJ N = 2 % = 2.86 1. 3.40 2. 3.25 3. 100	ENTJ N= 1 % = 1.43 1. 3.20 2. 3.30 3. 100

N = Number
% = % of total sample
1 = College GPA (CGPA)
2 = Mathematics and English GPA (MEGPA)
3 = Percentage of Credits passed (PCTCR)

Table 4-19: Average Dependent Variable Rankings by MBTI Type for Scholarship Athletes

ISTJ N = 8 % = 11.43 1. 8 2. 11 3. 9.5	ISFJ N = 1 % = 1.43 1. 1 2. 1 3. 2.5	INFJ N = 0 % = 0.00 1. 0 2. 0 3. 0	INTJ N = 2 % = 2.86 1. 9 2. 14 3. 9.5
ISTP N = 17 % = 24.29 1. 13 2. 9 3. 14	ISFP N = 3 % = 4.29 1. 11 2. 5 3. 9.5	INFP N = 0 % = 0.00 1. 0 2. 0 3. 0	INTP N = 5 % = 7.14 1. 14 2. 13 3. 13
ESTP N = 7 % = 10.00 1. 10 2. 6 3. 12	ESFP N = 2 % = 2.86 1. 7 2. 8 3. 2.5	ENFP N = 1 % = 1.43 1. 4.5 2. 10 3. 9.5	ENTP N = 8 % = 11.43 1. 12 2. 12 3. 7
ESTJ N = 12 % = 17.14 1. 6 2. 7 3. 5.5	ESFJ N = 1 % = 1.43 1. 4.5 2. 4 3. 5.5	ENFJ N = 2 % = 2.86 1. 2 2. 3 3. 2.5	ENTJ N= 1 % = 1.43 1. 3 2. 2 3. 2.5

* N=70
N = Number
% = % of total sample
1 = college GPA (CGPA)
2 = Mathematics and English GPA (MEGPA)
3 = Percentage of Credits passed (PCTCR)

Non-Cognitive Questionnaire Subscale Scores

The mean score results of the four subscales (Self-Concept, Goals, Support and Community Service) are shown on Table 4-20. These scores for the study subjects were within the range of the estimated norms on each of the four subscales (Tables 4-22). Scores by race were similar to total scores (Table 4-21). Published t-scores by race for the NCQ subscales referenced in this section may be found in the Appendix E, Tables E-1 and E-2.

Table 4-20: Means Scores of Non-Cognitive Questionnaire (NCQ) Subscales

NCQ Subscale	Score Range	Mean	SD	Max. Score	Min. Score
Self-Concept	7-26	19.88	2.28	24	13
Goals	3-13	9.49	1.75	13	6
Support	3-15	13.49	1.80	15	7
Community Service	2-8	5.88	.94	7	4

Table 4-21: Comparison of NCQ Mean Score Norms: Sample and Unpublished Norms

NCQ Subscale	Scholarship Athletes*		Norms+	
	White (N=31)	Non-white (N=38)	White (N=2144)	Black (N=442)
Self-Concept	19.8	20.0	18-19	19-20
Goals	9.4	9.5	9-10	9-10
Support	13.6	13.4	13-14	13-14
Community Service	6.1	5.7	5-6	5-6

* One scholarship athlete did not complete NCQ.
+ Estimates based t-scores of work in progress. Personal Communication (Sedlacek, 1993). See t-scores in Appendix E-1 and E-2.

Self-Concept

High scores on this subscale indicate a stronger self-concept than low scores. The majority of the respondents had high scores on the Self-Concept scale (Table 4-23 and Figure 4-2). The range of raw score possible for the Self-Concept subscale is 7 to 26. Scores for the scholarship athletes fell between 13 and 24. Ninety-seven

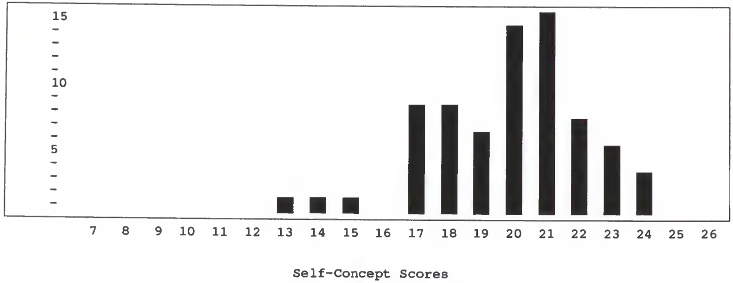


Figure 4-2: Non-Cognitive Questionnaire: Self-Concept Subscores

percent were less than one standard deviation below the norms for this subscale. Fifteen percent (15%) were more than one standard deviation above the norm.

Goals

The higher the score, the greater evidence of subjects' interest in establishing long range goals. The scholarship athletes' mean score for the Goals subscale was 9.49. Thirteen percent (13%) were more than one standard deviation below the test norm. Thirty-five percent (35%) were more than one standard deviation above the norm. The range possible for this test is between 3 and 13. The range for the study sample was between 6 and 13 (Table 4-23 and Figure 4-3). White and non-white scholarship athletes had a similar distribution of scores.

Table 4-22: Distribution of Self-Concept Scores for White and Non-White Scholarship Athletes

Self-concept Score	White		Non-White		Total	
	N	%	N	%	N	%
26	.	.	.	.	.	.
25	.	.	.	.	.	.
24	1	3.2	2	5.3	3	4.3
23	2	6.5	3	7.9	5	7.2
22	2	6.5	5	13.2	7	10.1
21	7	22.6	8	21.1	15	21.7
20	7	22.6	7	18.4	14	20.3
19	2	6.5	4	10.5	6	8.7
18	4	12.9	4	10.5	8	11.6
17	6	19.4	2	5.3	8	11.6
16	.	.	.	.	.	.
15	.	.	1	2.6	1	1.4
14	.	.	1	2.6	1	1.4
13	.	.	1	2.6	1	1.4
12	.	.	.	.	.	.
11	.	.	.	.	.	.
10	.	.	.	.	.	.
9	.	.	.	.	.	.
8	.	.	.	.	.	.
7	.	.	.	.	.	.
TOTAL	31	100.0	38	100.0	69*	100.0

* One participant did not complete the NCQ.

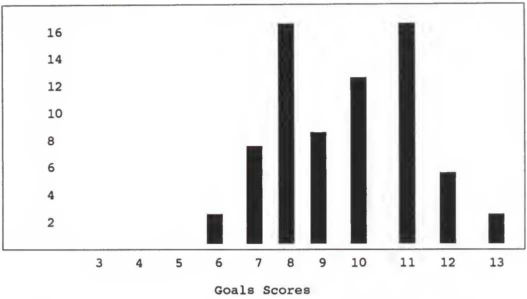


Figure 4-3: Non-Cognitive Questionnaire: Goals Subscores for Scholarship Athletes

Table 4-23: Distribution of Goals Scores for White and Non-White Scholarship Athletes

Goals	White		Non-White		Total	
Score	N	%	N	%	N	%
13	1	3.2	1	2.6	2	2.9
12	3	9.7	3	7.9	6	8.7
11	7	22.6	9	23.7	16	23.2
10	5	16.1	7	16.4	12	17.4
9	3	9.7	5	13.2	8	11.6
8	8	25.8	8	21.1	16	23.2
7	3	9.7	4	10.5	7	10.1
6	1	3.2	1	2.6	2	2.9
5	.	.	.	.	.	.
4	.	.	.	.	.	.
3	.	.	.	.	.	.
TOTAL	31	100.0	38	100.0	69*	100.0

* One participant did not complete the NCQ.

Support

High support scores indicate the presence of a strong family and peer support system. The Support scores displayed in Figure 4-4 showed a concentration on the high end of the scoring range irrespective of

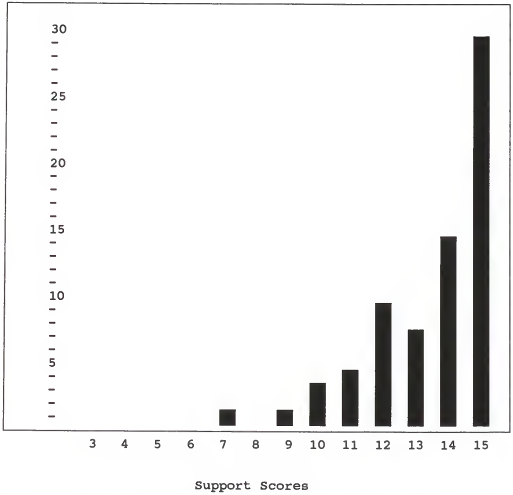


Figure 4-4: Non-Cognitive Questionnaire: Support Subscores for Scholarship Athletes

race (Table 4-24). The possible test range is between 3 and 15. Scholarship athletes results fell between 7 and 15. Forty-two percent (42%) were at the highest end of the scoring range of 15 which was more than one standard deviation above the mean. Only 14% scored below 11 which was more than one standard deviation below the mean. These results suggest that the scholarship athletes in this study experienced strong support in their environment regardless of their race.

Table 4-24: Distribution of Support Scores for White and Non-White Scholarship Athletes

Support Score	White N	White %	Non-White N	Non-White %	Total N	Total %
15	14	45.2	15	39.5	29	42.0
14	6	19.4	8	21.1	14	20.3
13	4	12.9	3	7.9	7	10.1
12	3	9.7	6	15.8	9	13.0
11	2	6.5	3	7.9	5	7.2
10	1	3.2	2	5.3	3	4.3
9	1	3.2	0	0.0	1	1.4
8	.	.	.	.	.	.
7	.	.	1	2.6	1	1.4
6	.	.	.	.	.	.
5	.	.	.	.	.	.
4	.	.	.	.	.	.
3	.	.	.	.	.	.
TOTAL	31	100.0	38	100.0	69*	100.0

* One participant did not complete the NCQ.

Community Service

High scores on the Community Support subscale indicate a high level of community involvement. The majority (57%) of the students did not respond to one of the questions in this subscale involving a written response. This resulted in limiting the variability of the scores because the test scoring instructions required that the mean score be assigned to the non-response items (see Non-Cognitive Questionnaire, Appendix D, Question 29).

The score range for the Community Service subscale was 4 to 7, while the possible scoring range for the Community Service subscale is 2 to 8 (Figure 4-5). Nine percent (9%) of the athletes' scores were more than one standard deviation below the mean and 10% were more than one standard deviation above the mean. White and non-white athletes showed a similar distribution (Table 4-25).

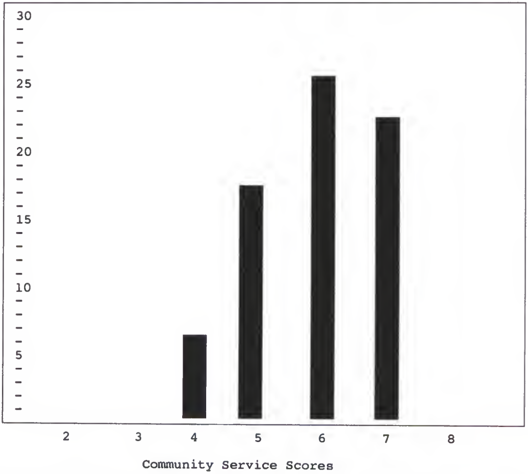


Figure 4-5: Non-Cognitive Questionnaire: Community Service Subscores for Scholarship Athletes

Table 4-25: Distribution of Community Service Scores for White and Non-White Scholarship Athletes

Community Service Scores	Race White N	 White %	 Non-White N	 Non-White %	Total N	Total %
8	.	.	.	.	.	.
7	14	45.2	7	18.4	21	30.4
6	8	25.8	17	44.7	25	36.2
5	6	19.4	11	28.9	17	24.6
4	3	9.7	3	7.9	6	8.7
3	.	.	.	.	.	.
2	.	.	.	.	.	.
TOTAL	31	100.0	38	100.0	69*	100.0

* One participant did not complete the NCQ.

Analysis of Hypothesis

For each of the hypotheses analyzed, the three dependent variables used in this study, College GPA, Mathematics and English GPA and Percentage of Credits Passed, were tested in separate equations. In addition, for the those hypotheses involving the Myers-Briggs Type Indicator (MBTI) both continuous and dichotomous measures were tested separately for each dependent variable. The letters following the hypothesis number, when present, indicate whether the continuous (a) or dichotomous (b) MBTI measure is being used. The number following the dash indicates the dependent variable being used: College GPA (1), Mathematics and English GPA (2), or Percentage of Credits Passed (3). It should be noted that only tables with significant results are presented here except in the initial hypothesis. Additional analysis may be found in Appendix F, Tables F-1 to F-5.

Hypothesis #1

> There is no relationship between each of the measures of academic success of scholarship athletes and the personal background factors of

athletes' race and their family socioeconomic background (using parents' occupation from the Non-Cognitive Questionnaire).

Race was significant at the .001 level for both college GPA (CGPA) and Mathematics and English GPA (MEGPA). White students received significantly higher CGPA and MEGPA scores than non-white students. The null hypothesis was therefore rejected for Hypothesis 1 involving the race variable with both CGPA and MEGPA. It was not rejected for the hypothesis involving PCTCR.

Table 4-26: Hypothesis 1-1: Relationship of Race and Family Socioeconomic Status (SES) to College GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	4.71	0.67	2.87	0.0117
Error	61	14.30	0.23		
Total	68	19.01			

R-Square	C.V.	Root MSE	Dep. Mean
0.25	20.34	0.48	2.37

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	3.82	3.23	16.30	0.0004
SES	3	0.90	0.30	1.28	0.3836
RACE * SES	3	0.75	0.25	1.07	0.3681

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		2.30	14.25	0.0001	0.16
RACE	1	0.34	1.55	0.1273	0.22
	2	0.00	.	.	.
SES	1	-0.23	-1.02	0.3106	0.23
	2	-0.01	-0.03	0.9754	0.20
	3	-0.55	-1.89	0.0634	0.29
	4	0.00	.	.	.
RACE * SES	1 1	0.55	1.25	0.2150	0.44
	1 2	-0.03	-0.11	0.9164	0.28
	1 3	0.43	1.13	0.2629	0.38
	1 4	0.00	.	.	.
	2 1	0.00	.	.	.
	2 2	0.00	.	.	.
	2 3	0.00	.	.	.
	2 4	0.00	.	.	.

Table 4-27: Hypothesis 1-2: Relationship of Race and Family Socioeconomic Status (SES) to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	10.54	2.35	1.51	0.0116
Error	60	31.36	0.18		
Total	67	41.90			

R-Square	C.V.	Root MSE	Dep. Mean
0.25	31.49	0.72	2.30

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	8.11	8.11	15.52	0.0002
SES	3	0.09	0.03	0.06	0.9805
RACE * SES	3	1.34	0.45	0.85	0.4712

Param.		Est.	T for HO	Prob.>|T|	Std. Error
Intercept		2.16	8.46	0.0001	0.26
RACE	1	0.36	1.09	0.2891	0.34
	2	0.00	.	.	.
SES	1	-0.44	-1.25	0.2150	0.35
	2	-0.12	-0.38	0.7058	0.31
	3	-0.36	-0.82	0.4162	0.44
	4	0.00	.	.	.
RACE * SES	1 1	0.96	1.46	0.1482	0.65
	1 2	0.33	0.77	0.4466	0.43
	1 3	0.60	1.05	0.2994	0.57
	1 4	0.00	.	.	.
	2 1	0.00	.	.	.
	2 2	0.00	.	.	.
	2 3	0.00	.	.	.
	2 4	0.00	.	.	.

Since SES lacked significance with any of the dependent variables in this hypothesis, it was dropped from subsequent analysis. Race was also dropped from any equations involving Percentage of Credits Passed because PCTCR had no significance in the analysis involving either race or SES (Table 4-28).

Since full scholarships had been given to all the athletes in this study, these results suggest that when socioeconomic status is not a limiting factor in college admission, it does not significantly change predictions of academic success. Race, however, did contribute to the prediction of college success when only race and socioeconomic status were factors in the analysis and CGPA and MEGPA were the dependent variables.

Table 4-28: Hypothesis 1-3: Relationship of Race and Family Socioeconomic Status (SES) to Percentage of Credits Passed

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	0.04	0.005	0.71	0.6602
Error	61	0.47	0.007		
Total	68	0.51			

R-Square	C.V.	Root MSE	Dep. Mean
0.08	9.42	0.09	0.94

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.00	0.01	1.26	0.2659
SES	3	0.02	0.00	0.57	0.6397
RACE * SES	3	0.00	0.00	0.19	0.9028

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		0.94	32.04	0.0001	0.03
RACE	1	0.02	0.44	0.6585	0.03
	2	0.00	.	.	.
SES	1	-0.04	-0.87	0.3866	0.04
	2	-0.02	-0.50	0.6160	0.04
	3	-0.04	-0.66	0.5092	0.05
	4	0.00	.	.	.
RACE * SES	1 1	0.03	1.32	0.7504	0.08
	1 2	0.03	0.59	0.5606	0.05
	1 3	-0.01	-0.15	0.8843	0.07
	1 4	0.00	.	.	.
	2 1	0.00	.	.	.
	2 2	0.00	.	.	.
	2 3	0.00	.	.	.
	2 4	0.00	.	.	.

Hypothesis #2

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using

high school GPA) and their academic aptitude
(using SAT/ACT scores).

A linear regression procedure involving race, high school GPA (HSGPA) and SAT/ACT z-scores was used to analyze this hypothesis. The results (Tables 4-29 and 4-30) showed that High School GPA (HSGPA) was significantly related to College GPA (CPGA), and Mathematics and English GPA (MEGPA) when race was held constant. HSGPA was significant at the .0001 level in both analyses. The null hypothesis was, therefore, rejected for the equations involving CGPA and MEGPA.

Table 4-29: Hypothesis 2-1: Prediction of Race, High School GPA (HSGPA) and SAT/ACT z-Scores to College GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	3	7.05	2.35	12.87	0.0001
Error	58	10.60	0.18		
Total	61	17.64			

R-Square	C.V.	Root MSE	Dep. Mean
0.40	18.11	0.43	2.35

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.08	0.08	0.44	0.5120
HSGPA	1	3.13	3.13	17.14	0.0001
z	1	0.02	0.02	0.10	0.7543

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		1.16	4.12	0.00	0.28
RACE	1	0.09	.66	0.51	0.14
	2	0.00	.	.	.
HSGPA		0.46	4.14	0.00	0.11
z		-0.02	-0.31	0.75	0.06

Table 4-30: Hypothesis 2-2: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	3	9.39	3.13	7.06	0.0004
Error	57	25.28	0.44		
Total	60	34.67			

	R-Square	C.V.	Root MSE	Dep. Mean
	0.27	29.33	0.67	2.27

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.90	0.90	2.04	0.1587
HSGPA	1	3.25	3.25	7.34	0.0089
z	1	0.18	0.18	0.41	0.5252
Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		0.94	2.14	0.04	0.44
RACE	1	0.31	1.43	0.16	0.21
	2	0.00	.	.	.
HSGPA		0.46	2.71	0.00	0.17
z		-0.06	-0.64	0.53	0.09

Race had no statistical impact on CGPA or MEGPA when both HSGPA and SAT/ACT *z*-scores were included in the equation. When race was dropped from the equation and HSGPA was used as a control in this reduced equation, *z*-scores remained statistically non-significant when used with all three dependent variables.

When High School GPA (HSGPA) and SAT/ACT *z*-scores were used in the linear equations involving College GPA (CGPA) and Mathematics and English GPA (MEGPA), race made no significant contribution.

Likewise, SAT/ACT *z*-scores did not contribute significantly to scholarship athletes' college success using these same two dependent measures (CGPA and MEGPA). These results are consistent with a growing body of literature (Astin, 1975; Tinto, 1967; Sedlacek, 1988) which suggests that SAT/ACT scores are not good predictors of academic success in college and thus, should be given less weight in the admissions criteria for college entrance. The lack of significant variance in the Percentage of Credits Passed (PCTCR) (see Appendix F, Table F-1) probably also contributed to its lack of significance in any of the linear equations involving the PCTCR variable.

Hypothesis #3a

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores) and their continuous MBTI measures.

In Hypothesis 3a, MBTI continuous scores were added to the linear equation in Hypothesis 2 (Table 4-31 and 4-32). As with Hypothesis 2, when race was controlled, race had no statistically significant impact on either CGPA or MEGPA. High school GPA (HSGPA) continued to be statistically significant when either CGPA or MEGPA were the dependent variables used in the analysis.

Using a reduced model with the race variable dropped and HSGPA used as a control, HSGPA remained significant in the equations involving CGPA and MEGPA. When PCTCR was used there were no significant results (Appendix F, Table F-2). Because there were no additional significant relationships when the MBTI continuous scores were added using any of the dependent measures, the null hypotheses for 3a (adding continuous MBTI measures) was not rejected.

Table 4-31: Hypothesis 3a-1: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores and MBTI Continuous Preference Scores to College GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	7.43	1.06	5.61	0.0001
Error	54	10.21	0.19		
Total	61	17.64			

R-Square	C.V.	Root MSE	Dep. Mean
0.42	18.43	0.43	2.36

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.09	0.09	0.46	0.4996
HSGPA	1	3.31	3.31	17.50	0.0001
z	1	0.09	0.09	0.46	0.4995
EICONT	1	0.00	0.00	0.00	0.9806
SNCONT	1	0.09	0.09	0.50	0.4838
TFCONT	1	0.14	0.14	0.07	0.7886
JPCONT	1	0.00	0.00	1.18	0.3386

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		1.56	2.47	0.02	0.63
RACE	1	0.10	0.68	0.50	0.15
	2	0.00	.	.	.
HSGPA		0.47	4.18	0.00	0.11
z		-0.04	-0.68	0.50	0.06
EICONT		-0.00	0.02	0.98	0.00
SNCONT		-0.00	-0.71	0.48	0.00
TFCONT		-0.00	0.27	0.79	0.00
JPCONT		-0.00	-0.97	0.34	0.00

Table 4-32: Hypothesis 3a-2: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores and MBTI Continuous Preference Scores to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	10.88	1.55	3.46	0.004
Error	53	23.78	0.45		
Total	60	34.66			

R-Square	C.V.	Root MSE	Dep. Mean
0.31	29.50	.67	2.27

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.72	0.72	12.83	0.2104
HSGPA	1	3.72	3.72	8.30	0.0057
z	1	0.43	0.43	0.95	0.3337
EICONT	1	0.00	0.00	0.01	0.9382
SNCONT	1	0.49	8.49	0.10	0.3019
TFCONT	1	0.11	0.11	0.24	0.6283
JPCONT	1	0.54	0.54	1.21	0.2771

Param.		Est.	T for HO	Prob.>|T|	Std. Error
Intercept		1.62	1.61	0.11	1.00
RACE	1	0.29	1.27	0.21	0.23
	2	0.00	.	.	.
HSGPA		0.50	2.88	0.00	0.17
z		-0.10	-0.98	0.33	0.10
EICONT		0.00	0.08	0.94	0.00
SNCONT		-0.01	-1.04	0.30	0.01
TFCONT		0.00	0.49	0.63	0.01
JPCONT		-0.10	-1.10	0.28	0.00

Hypothesis #3b

There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using High School GPA) and their academic aptitude (using SAT/ACT scores) and their dichotomous MBTI measures.

In Hypothesis 3b, MBTI dichotomous scores were added to the linear equation in Hypothesis 2 (Table 4-33 and 4-34). As with Hypothesis 2, when race was controlled, race had no statistically significant impact on either CGPA or MEGPA. High school GPA (HSGPA) continued to be statistically significant when either CGPA or MEGPA were the dependent variables used in the analysis.

Table 4-33: Hypothesis 3b-1: Prediction of Race, High School GPA (HSGPA) and SAT/ACT z-Scores and MBTI Dichotomous Preference Scores to College GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	7.84	1.11	6.16	0.0001
Error	54	9.81	0.18		
Total	61	17.65			

R-Square	C.V.	Root MSE	Dep. Mean
0.44	18.06	0.43	2.36

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.15	0.15	0.83	0.3672
HSGPA	1	0.62	0.62	14.43	0.0004
z	1	0.07	0.07	0.39	0.5355
EIPRF	1	0.02	0.02	0.12	0.7314
SNPRF	1	0.01	0.01	0.06	0.8009
TFPRF	1	0.05	0.05	0.30	0.5856
JPPRF	1	0.61	0.00	0.37	0.0721

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		1.09	3.67	0.0006	0.30
RACE	1	0.13	0.91	0.3672	0.14
	2	0.00	.	.	.
HSGPA		0.43	3.80	0.0004	0.11
z		-0.04	-0.62	0.5355	0.06
EIPRF	E	0.04	.35	0.7314	0.11
	I	0.00	.	.	.
SNPRF	N	0.03	-0.25	0.8009	0.13
	S	0.00	.	.	.
TFPRF	F	-0.10	0.55	0.5856	0.18
	T	0.00	.	.	.
JPPRF	J	-0.23	1.83	0.0721	0.12
	P	0.00	.	.	.

Table 4-34: Hypothesis 3b-2: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores and MBTI Dichotomous Preference Scores to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	7	9.52	1.36	2.87	0.0129
Error	54	25.14	0.47		
Total	61	34.66			

R-Square	C.V.	Root MSE	Dep. Mean
0.44	18.06	0.43	2.36

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.89	0.89	1.87	0.1774
HSGPA	1	2.91	0.91	6.13	0.0165
z	1	0.19	0.19	0.40	0.5277
EIPRF	1	0.00	0.00	0.00	0.9766
SNPRF	1	0.00	0.00	0.01	0.9246
TFPRF	1	0.02	0.02	0.03	0.8554
JPPRF	1	0.09	0.09	0.20	0.6577

Param.		Est.	T for HO	Prob.>|T|	Std. Error
Intercept		0.93	1.94	0.0573	0.48
RACE	1	0.33	1.37	0.1774	0.23
	2	0.00	.	.	.
HSGPA		0.45	2.48	0.0165	0.18
z		-0.07	-0.64	0.5277	0.11
EIPRF	E	0.01	0.03	0.9766	0.18
	I	0.00	.	.	.
SNPRF	N	-0.02	-0.10	0.9246	0.22
	S	0.00	.	.	.
TFPRF	F	0.05	0.18	0.8554	0.28
	T	0.00	.		
JPPRF	J	0.09	0.45	0.6577	0.20
	P	0.00	.	.	.

Again, using a reduced model with the race variable dropped and HSGPA used as a control, HSGPA remained significant, but there was no additional significant relationships when the MBTI dichotomous scores were added and the dependent measures of either College GPA (CGPA) or Mathematics and English GPA (MEGPA) were used in the analysis (Tables 4-33 and 4-34). There continued to be no significant relationship between any of the variables added in this hypothesis and the Percentage of Credits Passed (PCTCR) (Appendix F, Table F-3). Thus, the null hypotheses for 3b (adding dichotomous MBTI measures) was not rejected for any of the equations.

The overall result was that the null hypotheses for both Hypothesis #3a (adding continuous MBTI measures) and Hypothesis #3b (adding, instead, dichotomous MBTI measures), were not rejected for any of the equations. These results of both Hypothesis #3a and #3b suggest that high school GPA (HSGPA) remains the overriding factor contributing to college success among scholarship athletes when MBTI scores are included and any of the three dependent measures were used.

Hypothesis #4a

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their continuous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person and (4) Demonstrated Community Service.

Four subscales of the Non-Cognitive Questionnaire were added to the linear equations in Hypothesis #3 to test Hypothesis #4. When race was used as a control, in Hypothesis #4a, involving MBTI continuous scores (Tables 4-35 and 4-36), no additional significant support for this hypothesis was found. The results did not differ when race was excluded from the analysis. The null hypotheses for 4a (using continuous MBTI scores) was therefore not rejected for the equations involving any of the three dependent variables.

Table 4-35: Hypothesis 4a-1: Prediction of Race, High School GPA (HSGPA) and SAT/ACT z-Scores and MBTI Continuous Preference Scores to College GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	11	8.14	0.74	3.84	0.0005
Error	49	9.45	0.19		
Total	60	17.59			

R-Square	C.V.	Root MSE	Dep. Mean
0.46	18.64	0.44	2.36

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.05	0.05	0.27	0.6072
HSGPA	1	3.10	0.05	16.12	0.0002
z	1	0.10	0.10	0.05	0.8188
EICONT	1	0.00	0.00	0.02	0.8809
SNCONT	1	0.12	0.12	0.63	0.4312
TFCONT	1	0.06	0.06	0.31	0.5790
JPCONT	1	0.24	0.24	1.29	0.2608
SELFC		0.24	0.24	1.27	0.2644
GOALS		0.00	0.00	0.00	0.9937
SUPPT		0.26	0.26	1.36	0.2487
CSERV		0.43	0.43	2.22	0.1430

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		0.99	0.98	0.3313	1.01
RACE	1	0.08	0.52	0.6072	0.15
	2	0.00	.	.	.
HSGPA		0.47	4.82	0.0002	0.11
z		-0.02	-0.23	0.8188	0.07
EICONT		0.00	0.15	0.8809	0.00
SNCONT		0.00	-0.79	0.4312	0.00
TFCONT		0.00	0.56	0.5790	0.00
JPCONT		-0.00	-1.14	0.2608	0.00
SELFC		0.03	1.13	0.2644	0.03
GOALS		-0.00	-0.01	0.9937	0.04
SUPPT		0.04	1.17	0.2487	0.04
CSERV		-0.11	-1.49	0.1430	0.08

Table 4-36: Hypothesis 4a-2: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores, MBTI Continuous Preference Scores and NCQ Subscales to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	11	11.91	1.08	2.29	0.0241
Error	48	22.70	0.47		
Total	59	34.61			

R-Square	C.V.	Root MSE	Dep. Mean
0.34	30.34	.69	2.67

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.40	0.40	0.84	0.3645
HSGPA	1	3.74	3.74	7.91	0.0071
z	1	0.27	0.27	0.58	0.4506
EICONT	1	0.08	0.08	0.18	0.6771
SNCONT	1	0.40	0.40	0.85	0.3610
TFCONT	1	0.23	0.23	0.48	0.4929
JPCONT	1	0.71	0.71	1.50	0.2266
SELFC	1	0.20	0.20	0.43	0.5143
GOALS	1	0.00	0.00	0.01	0.9283
SUPPT	1	0.58	0.58	1.22	0.2751
CSERV	1	0.00	0.00	0.00	0.9972

Param.		Est.	T for HO	Prob.>|T|	Std. Error
Intercept		-0.01	-0.01	0.9951	1.61
RACE	1	0.23	0.92	0.3645	0.25
	2	0.00	.	.	.
HSGPA		0.52	2.81	0.0071	0.18
z		-0.08	-0.76	0.4506	0.11
EICONT		0.00	0.42	0.6771	0.01
SNCONT		-0.00	-0.92	0.3610	0.01
TFCONT		0.00	0.69	0.4929	0.01
JPCONT		-0.01	-1.22	0.2266	0.01
SELFC		0.03	0.66	0.5143	0.04
GOALS		-0.01	-0.09	0.9283	0.06
SUPPT		0.06	1.10	0.2751	0.06
CSERV		0.00	0.00	0.9972	0.12

Hypothesis #4b

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using

> high school GPA) and their academic aptitude (using SAT/ACT scores), their dichotomous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person and (4) Demonstrated Community Service.

When race was used as a control in Hypothesis #4b (involving MBTI dichotomous scores), JP dichotomous scores were significantly related to CGPA along with HSGPA (Table 4-37). Judging (J) types were significantly related to higher college GPAs. However, as in Hypothesis 3b, race had no statistical impact in this equation nor were any of the four subscales of the NCQ significant. HSGPA and JP dichotomous scores were also significant when race was dropped from the equation involving CGPA. Thus, the null hypothesis for #4b (involving dichotomous measures) was rejected for the equation involving CGPA (Table 4-37) but not rejected for the equation involving MEGPA (Table 4-38).

The implication of the significance of the judging perceptive (JP) preference, (with J being positively related to higher college GPAs), suggests that scholarship athletes were more likely to be successful students in traditional college learning environments (such as those found in NCAA Division I-A colleges) then perceptive (P) types when college GPA (CGPA) is the dependent measure of success. This is consistent with other literature relating to judging (J) types that suggests that Js prefer a planned organized life and like to reach closure in their activities. Js have also been found to get higher grades than perceptive (P) types whose interest and curiosity often gives them higher scores on aptitude measures.

The NCQ subscales of Self-Concept, Goals, Support and Community service influence the results in this equation, but are not directly significant. The lack of significance of any of the NCQ variables may be a result of the limited sample of scholarship athletes used in this study or the reliability of the instrument.

Table 4-37: Hypothesis 4b-1: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores MBTI Continuous Preference Scores and NCQ Subscales to College GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	11	8.53	0.78	4.19	0.0002
Error	49	9.06	0.18		
Total	60	17.59			

R-Square	C.V.	Root MSE	Dep. Mean
0.48	18.26	0.43	2.36

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.08	0.08	0.41	0.5233
HSGPA	1	2.65	2.65	14.38	0.0004
z	1	0.01	0.01	0.07	0.7900
EIPRF	1	0.01	0.01	0.04	0.8352
SNPRF	1	0.02	0.02	0.12	0.7285
TFPRF	1	0.06	0.06	0.34	0.5645
JPPRF	1	0.78	0.78	4.19	0.0459
SELFC	1	0.22	0.22	1.21	0.2774
GOALS	1	0.74	0.74	0.40	0.5302
SUPPT	1	0.30	0.30	1.64	0.2068
CSERV	1	0.24	0.24	1.30	0.2604

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		0.56	0.79	0.43	0.71
RACE	1	0.10	.64	0.52	0.15
	2	0.00	.	.	.
HSGPA		0.44	3.79	0.00	0.12
z		-.02	-.27	0.79	0.07
EIPRF	E	0.02	0.21	0.83	0.12
	I	0.00	.	.	.
SNPRF	N	0.05	0.35	0.73	0.15
	S	0.00	.	.	.
TFPRF	F	0.11	0.58	0.56	0.18
	T	0.00	.	.	.
JPPRF	J	0.26	2.05	0.05	0.13
	P	0.00	.	.	.
SELFC		0.03	1.10	0.28	0.03
GOALS		-.02	-0.63	0.53	0.04
SUPPT		0.04	1.28	0.21	0.04
CSERV		-.08	-1.14	0.26	0.07

Table 4-38: Hypothesis 4b-2: Prediction of Race, High School GPA (HSGPA) and SAT/ACT *z*-Scores, MBTI Dichotomous Preference Scores and NCQ Scores to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	11	10.52	0.96	1.90	0.0624
Error	48	24.10	0.50		
Total	59	34.61			

R-Square	C.V.	Root MSE	Dep. Mean
0.48	18.26	0.43	2.36

Source	DF	Type III SS	Mean Square	F-value	PR > F
RACE	1	0.50	0.50	0.99	0.5233
HSGPA	1	3.08	3.08	0.13	0.0004
z	1	0.05	0.05	0.30	0.7900
EIPRF	1	0.01	0.01	0.06	0.8352
SNPRF	1	0.03	0.03	0.01	0.7285
TFPRF	1	0.00	0.00	0.07	0.5645
JPPRF	1	0.04	0.04	0.61	0.0459
SELFC	1	0.30	0.30	0.29	0.2774
GOALS	1	0.14	0.14	0.15	0.5302
SUPPT	1	0.07	0.07	0.93	0.2068
CSERV	1	0.47	0.47	0.10	0.2604

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		-0.35	-0.30	0.77	1.17
RACE	1	0.26	.99	0.33	0.26
	2	0.00	.	.	.
HSGPA		0.48	2.48	0.02	0.19
z		-0.06	-0.54	0.59	0.11
EIPRF	E	-0.05	-0.25	0.81	0.20
	I	0.00	.	.	.
SNPRF	N	-0.02	-0.08	0.93	0.24
	S	0.00	.	.	.
TFPRF	F	0.08	0.27	0.79	0.30
	T	0.00	.	.	.
JPPRF	J	0.16	0.78	0.44	0.21
	P	0.00	.	.	.
SELFC		0.03	0.53	0.60	0.04
GOALS		-.02	-0.38	0.70	0.06
SUPPT		0.06	0.96	0.34	0.06
CSERV		0.04	0.32	0.75	0.12

The unique personal and social conditions of the scholarship athlete group may also have contributed to these results. When scholarship athletes are selected because of their athletic success, they already have experienced certain personal conditions that are also believed to contribute to academic success. They have set and achieved specific goals in their sport and have gained self-confidence as a result of their athletic goal achievements. Once on campus, they benefit from a strong support system of athletic faculty and athletic peers. They also participate in a unique kind of community service within the university through their athletic involvement. However, they usually have very limited time for other types of community service outside the athletic realm.

Although none of the NCQ subscales was significant, the answers requiring individual written responses on the Non-Cognitive Questionnaire (NCQ) revealed some unexpected, but consistent patterns of response among the scholarship athletes in this study. These are described below:

In question #8 on the Non-Cognitive Questionnaire (NCQ) respondents listed their most important current goals. The majority (81%) of the respondents listed academic goals first (Figure 4-6). Among white players, 78% listed academic goals first. Among non-white players 83% listed academic goals first.

A total of 176 responses were obtained on question #8 relating to current goals (Figure 4-7). Of these responses, 46% of all the responses noted by the athletes were academic goals (43% of white responses and 49% of non-white responses). Only 23% of all responses were athletic-related goals (29% white and 18% of non-white responses). Fifty-one percent (51%) of the non-white respondents and 22% of the white respondents mentioned no sports-related goals at all. The remaining 31% of the responses (28% white responses and 33% non-white

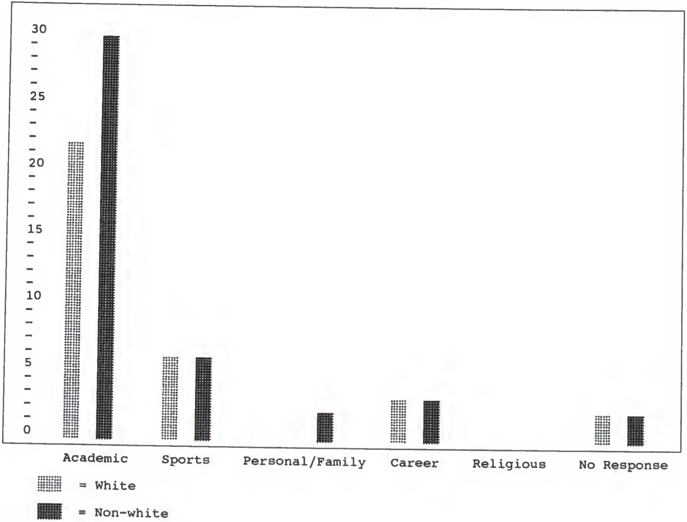


Figure 4-6: Question #8: Most Important Current Goal

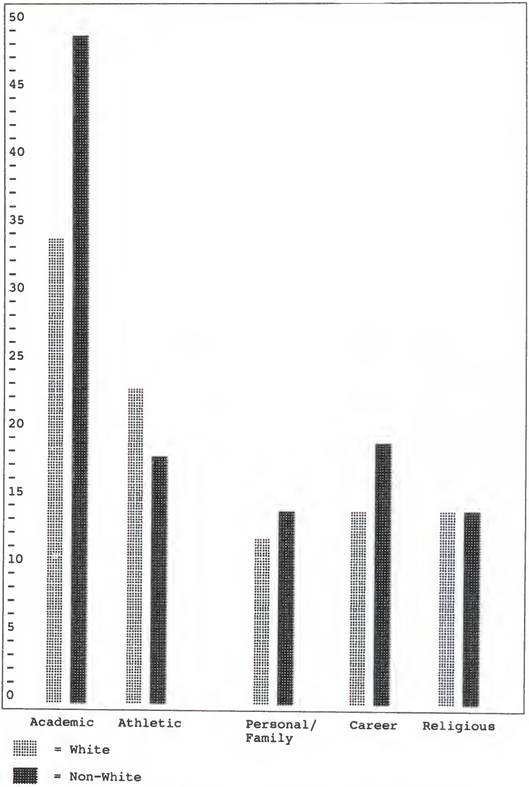


Figure 4-7: Question #8: Total Responses to Current Goals

responses) were in personal and family, religious or career goal categories.

Question #10 on the NCQ asked respondents to list past accomplishments. Frequency table of the analysis of these responses are shown in Figure 4-8. Eighty-nine percent (89%) of the white athletes and 84% of the non-white athletes responded to this question. Non-white respondents (58%) indicated academic accomplishments first. White respondents (37%) indicated academic accomplishments first while an equal percentage indicated getting a scholarship first. This was the most important accomplishment for less than half as many (15%) of the non-white respondents.

There was a total of 155 responses to Question #10 (relating to past accomplishments) on the Non-Cognitive Questionnaire (Figure 4-9). When all the responses for Question #10 were analyzed together, the highest percent of responses for both white (36%) and non-white respondents (44%) fell in the academic accomplishment category. Getting a scholarship had the second highest percentage of responses for whites (20%). Athletic accomplishments had the second highest percentage for non-white students. Getting a scholarship was separated from sports accomplishments and analyzed as a separate category because it was unclear from the responses whether the respondents viewed this as an academic or an athletic accomplishment.

Also of interest in this section was the indication of survival -oriented goals (either academic or personal) by 5% of non-white respondents in this section whose written responses included such comments as "still alive," "stayed out of trouble" and "survived life in college."

Question #29 related to involvement in high school and community activities (Figure 4-10). Only 43% of the athletes responded to this question (41% of white, 24% of non-white scholarship athletes). The lack of response could be an indication of low involvement in these

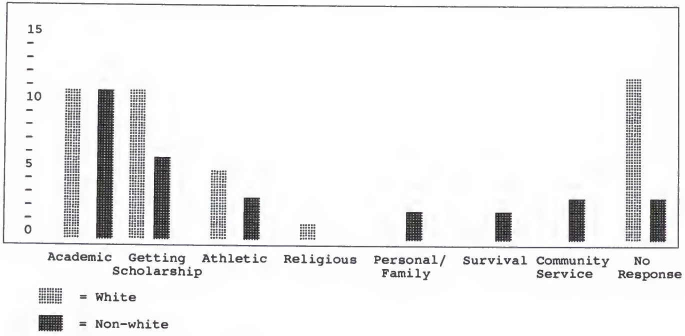


Figure 4-8: Question #10: Most Important Past Accomplishment

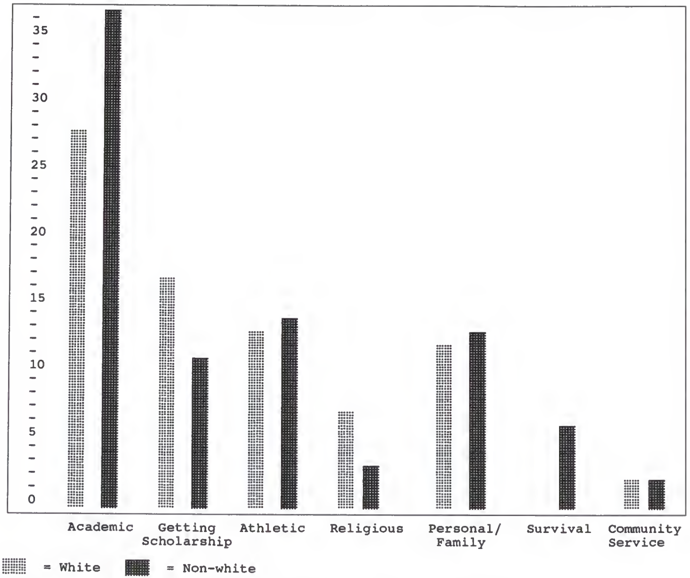


Figure 4-9: Question #10: Total Responses - Past Accomplishments

activities or just a failure to respond to the question since it was the last one on the questionnaire.

Among those who did respond to this question, there were six major types of organizations in which students indicated involvement: academic, athletic, religious, social, leadership and community service organizations. Differences between white and non-white scholarship athletes were evident in the religious, social and leadership categories.

The most important activity for white respondents (Figure 4-10) was involvement in religious activities. Forty percent (40%) of white respondents listed this activity first. The highest response among non-white respondents (46%) fell in the social category. The leadership category for non-whites was also high with 33% of the non-white respondents indicating leadership involvement in areas such as student government.

A total of 78 responses were obtained on Question #29 (Figure 4-11). Of these responses, 14% were related to religious activities for white respondents. For non-white respondents, social activities were mentioned most frequently (15% of the responses). Athletic activities were the second most frequently mentioned activity for both white and non-white respondents (12% of the responses), but for non-whites leadership activities had the same frequency of responses as athletic activities. Community service had the lowest frequency for both groups with 1% of white responses and 4% of non-white responses.

General comments regarding activities that had helped the subjects become successful students or might help them become more successful students were noted by 12 of the respondents. Academic activities designed to improve study skills were the most frequently mentioned beneficial activity. The second most common comment related to developing goals and motivation for staying in school. Religious support was also mentioned by two of the respondents.

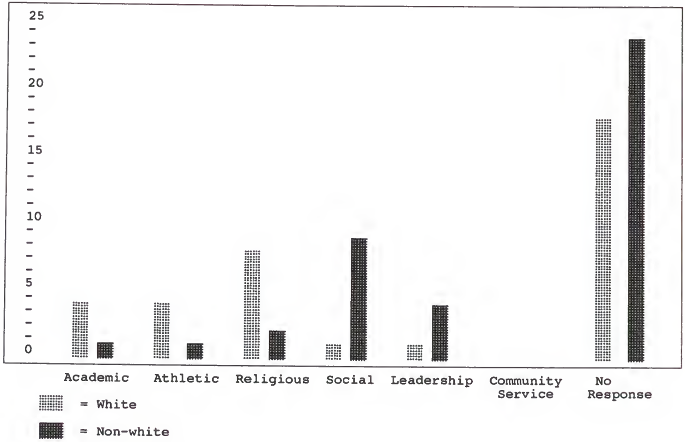


Figure 4-10: Question #29: Most Important High School/Community Activity

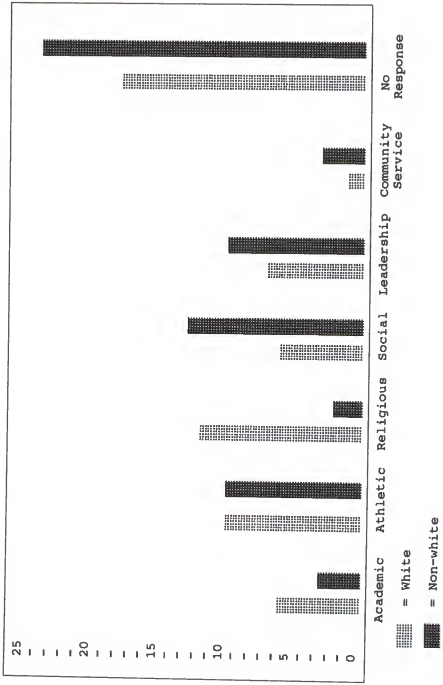


Figure 4-11: Question #29: Total Responses - High School/Community Activities

Table 4-39: Means Comparison of MBTI Types Among Scholarship Athletes Dependent Variable: College GPA

ISTJ N = 8 % = 11.43 ■■■■■■■■ Mean 2.36 SD .73 Rank 8	ISFJ N = 1 % = 1.43 ■ Mean 3.60 SD . Rank 1	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 2 % = 2.86 ■■ Mean 2.35 SD .21 Rank 9
ISTP N = 17 % = 24.29 ■■■■■■■■■■ ■■■■■■■ Mean 2.24 SD .42 Rank 13	ISFP N = 3 % = 4.29 ■■■ Mean 2.33 SD .72 Rank 11	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 5 % = 7.14 ■■■■■ Mean 2.10 SD .31 Rank 14
ESTP N = 7 % = 10.00 ■■■■■■■ Mean 2.34 SD .56 Rank 10	ESFP N = 2 % = 2.86 ■■ Mean 2.45 SD .07 Rank 7	ENFP N = 1 % = 1.43 ■ Mean 2.50 SD . Rank 4	ENTP N = 8 % = 11.43 ■■■■■■■■ Mean 2.26 SD .40 Rank 12
ESTJ N = 12 % = 17.14 ■■■■■■■■■■ ■■ Mean 2.48 SD .50 Rank 6	ESFJ N = 1 % = 1.43 ■ Mean 2.50 SD . Rank 4	ENFJ N = 2 % = 2.86 ■■ Mean 3.40 SD .14 Rank 2	ENTJ N= 1 % = 1.43 ■ Mean 3.20 SD . Rank 3

	N	%	Mean	SD	t or f
E	34	48.57	2.47	.51	1.41
I	36	51.43	2.30	.53	
S	51	72.86	2.37	.53	-.27
N	19	27.14	2.41	.52	
T	60	85.71	2.33	.49	-2.33*
F	10	14.29	2.73	.63	
J	27	38.57	2.57	.62	2.25*
P	43	61.43	2.27	.42	
IJ	11	15.71	2.47	.72	2.36
IP	25	35.71	2.22	.42	
EP	18	25.71	2.33	.43	
EJ	16	22.86	2.28	.41	
ST	44	62.86	2.34	.52	2.63
SF	7	10.00	2.57	.62	
NF	3	4.29	3.10	.53	
NT	16	22.86	2.28	.41	
SJ	22	31.43	2.49	.61	3.20*
SP	29	41.43	2.29	.46	
NP	14	20.00	2.22	.36	
NJ	5	7.14	2.94	.56	
TJ	23	32.86	2.46	.57	5.27*
TP	37	52.86	2.24	.42	
FP	6	8.57	2.40	.46	
FJ	4	5.71	3.23	.50	
IN	7	10.00	2.17	.29	.95
EN	12	17.14	2.55	.58	
IS	29	41.43	2.33	.58	
ES	22	31.43	2.43	.48	
ET	28	40.00	2.41	.50	2.30
EF	6	8.57	2.78	.48	
IF	4	5.71	2.65	.87	
IT	32	45.71	2.25	.45	
S dom	18	25.71	2.43	.64	1.26
N dom	11	15.71	2.30	.34	
T dom	35	50.00	2.30	.44	
F dom	6	8.57	2.72	.70	

* N = 70

■ = 1 person

Table 4-40: Means Comparison of MBTI Types Among Scholarship Athletes Dependent Variable: Mathematics and English GPA*

ISTJ N = 8 % = 11.43 ■■■■■■■■ Mean 2.06 SD 1.05 Rank 11	ISFJ N = 1 % = 1.43 ■ Mean 3.60 SD . Rank 1	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 2 % = 2.86 ■■ Mean 1.75 SD 1.20 Rank 14
ISTP N = 17 % = 24.29 ■■■■■■■■■■ ■■■■■■■ Mean 2.23 SD .42 Rank 9	ISFP N = 3 % = 4.29 ■■■ Mean 2.50 SD .70 Rank	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 5 % = 7.14 ■■■■■ Mean 2.02 SD .33 Rank 13
ESTP N = 7 % = 10.00 ■■■■■■■ Mean 2.46 SD 1.11 Rank 5	ESFP N = 2 % = 2.86 ■■ Mean 2.25 SD .07 Rank 8	ENFP N = 1 % = 1.43 ■ Mean 2.10 SD . Rank 10	ENTP N = 8 % = 11.43 ■■■■■■■■ Mean 2.05 SD .49 Rank 12
ESTJ N = 11 % = 17.14 ■■■■■■■■■■ ■ Mean 2.43 SD .76 Rank 5	ESFJ N = 1 % = 1.43 ■ Mean 2.80 SD . Rank 4	ENFJ N = 2 % = 2.86 ■■ Mean 3.25 SD 1.06 Rank 3	ENTJ N= 1 % = 1.43 ■ Mean 3.30 SD . Rank 2

	N	%	Mean	SD	t or f
E	33	47.83	2.47	.51	
I	36	52.17	2.30	.53	1.41
S	50	72.46	2.33	.82	
N	19	27.54	2.20	.69	.61
T	59	85.51	2.23	.78	
F	10	14.29	2.70	.70	-1.77
J	26	37.68	2.42	.92	
P	43	62.32	2.23	.69	.99
IJ	11	15.94	2.15	1.06	
IP	25	36.23	2.22	.65	
EP	18	26.08	2.23	.75	1.11
EJ	15	21.74	2.62	.78	
ST	43	62.32	2.29	.85	
SF	7	10.15	2.63	.62	
NF	3	4.35	2.87	1.00	1.37
NT	16	23.19	2.08	.58	
SJ	21	30.43	2.36	.89	
SP	29	42.03	2.31	.78	
NP	14	20.29	2.04	.40	.89
NJ	5	7.25	2.66	1.11	
TJ	22	31.88	2.27	.90	
TP	37	53.62	2.21	.72	
FP	6	8.70	2.35	.48	2.15
FJ	4	5.80	3.23	.69	
IN	7	10.15	1.94	.53	
EN	12	17.39	2.36	.74	
IS	29	42.03	2.26	.83	.53
ES	21	30.43	2.44	.82	
ET	27	39.13	2.36	.80	
EF	6	8.70	2.65	.71	
IF	4	5.80	2.78	.79	1.49
IT	32	46.38	2.13	.77	
S dom	18	26.08	3.22	1.01	
N dom	11	15.94	2.00	.54	
T dom	35	49.28	2.94	.70	.26
F dom	6	8.70	2.80	.75	

* N = 69 due to missing English observation (no English courses taken by one student)

■ = 1 person

Table 4-41: Means Comparison of MBTI Types Among Scholarship Athletes Dependent Variable: Percentage of Credits Passed

ISTJ N = 8 % = 11.43 ■■■■■■■■ Mean 93 SD 05 Rank 11	ISFJ N = 1 % = 1.43 ■ Mean 100 SD Rank 1	INFJ N = 0 % = 0.00 Mean SD Rank	INTJ N = 2 % = 2.86 ■■ Mean 95 SD 08 Rank 8
ISTP N = 17 % = 24.29 ■■■■■■■■■■■■■■■■■ Mean 89 SD 14 Rank 14	ISFP N = 3 % = 4.29 ■■■ Mean 94 SD 08 Rank 9	INFP N = 0 % = 0.00 Mean SD Rank	INTP N = 5 % = 7.14 ■■■■■ Mean 91 SD 10 Rank 13
ESTP N = 7 % = 10.00 ■■■■■■■ Mean 93 SD 05 Rank 11	ESFP N = 2 % = 2.86 ■■ Mean 100 SD Rank 1	ENFP N = 1 % = 1.43 ■ Mean 94 SD Rank 9	ENTP N = 8 % = 11.43 ■■■■■■■■ Mean 96 SD 05 Rank 7
ESTJ N = 12 % = 17.14 ■■■■■■■■■■■■ Mean 97 SD 06 Rank 5	ESFJ N = 1 % = 1.43 ■ Mean 97 SD Rank 5	ENFJ N = 2 % = 2.86 ■■ Mean 100 SD Rank 1	ENTJ N= 1 % = 1.43 ■ Mean 108 SD Rank 1

	N	%	Mean	SD	t or F
E	34	48.57	96	05	
I	36	51.43	91	11	2.54*
S	51	72.86	93	09	
N	19	27.14	94	06	.71
T	60	85.71	93	09	
F	10	14.29	97	05	-1.37
J	27	38.57	96	05	
P	43	61.43	92	10	2.12*
IJ	11	15.71	94	05	
IP	25	35.71	90	12	
EP	18	25.71	95	05	2.87*
EJ	16	22.86	97	05	
ST	44	62.86	96	10	
SF	7	10.00	97	06	
NF	3	4.29	98	04	.78
NT	16	22.86	94	07	
SJ	22	31.43	96	06	
SP	29	41.43	92	10	
NP	14	20.00	94	07	1.50
NJ	5	7.14	98	05	
TJ	23	32.86	96	06	
TP	37	52.86	92	10	
FP	6	8.57	96	06	1.78
FJ	4	5.71	99	01	
IN	7	10.00	92	09	
EN	12	17.14	96	04	
IS	29	41.43	91	11	2.07
ES	22	31.43	96	05	
ET	28	40.00	96	05	
EF	6	8.57	99	03	
IF	4	5.71	95	07	2.56
IT	32	45.71	91	11	
S dom	18	25.71	94	05	
N dom	11	15.71	95	05	
T dom	35	50.00	92	11	.54
F dom	6	8.57	96	06	

* N = 70

■ = 1 person

Hypothesis #5

> There is no relationship between any of the three defined measures of academic success and MBTI type measures.

Analysis of Hypothesis #5 was done by three methods. In Method I, means of each of the dependent variables (College GPA, Mathematics and English GPA and Percentage of Credits Passed) were computed for each of the MBTI dichotomies (E or I, S or N, T or F, J or P) using a _t_-test procedure.

In Method II the means of each dependent variable were compared with the 16 Types. A one-way ANOVA was run using the general linear regression model (GLM) procedure to compare the means of the three dependent variables separately with each of the 16 Types. _F_-tests for the conventional groupings were also obtained using the GLM procedure. There were no significant correlations between MBTI continuous scores and the three measures of academic success.

The results of the Method I and II analysis are shown in separate Means Comparison Tables for each dependent variable (Tables 4-39, 4-40 and 4-41). The 16 cells show the means, standard deviations and rankings for each of the 16 Types. The results for preferences and groupings are shown on the right side of each table.

Table 4-42: Correlations of MBTI Continuous Scores with Dependent Variables

Dependent Variable	N	EI r	EI p>	SN r	SN p>	TF r	TF p>	JP r	JP p>
College GPA	70	.06	.61	.06	.64	.13	.28	-.15	.21
Mathematics and English GPA	69*	.00	.99	.15	.22	.13	.30	-.14	.23
Percentage of Credits Passed	70	.17	.15	.15	.04	.72	.11	-.16	.17

* Missing observation because one student had no English classes.

Using Method I to compare type preferences in Hypothesis #5, with College GPA (CGPA), the JP dichotomy was significant (Table 4-39). Judging (J) types were the significantly more academically successful (using CGPA) than perceptive (P) types (p. 001). The TF dichotomy was also significantly related to College GPA with feeling (F) types having higher college GPAs than thinking (T) types.

Table 4-40 shows the results of the MBTI means comparison with Mathematics and English GPA (MEGPA). There were no significant differences in MBTI preferences and MEGPA though trends were similar to those seen in the analysis using CGPA.

Using Method I with Percentage of Credits Passed (PCTCR), however (Table 4-41), the EI dichotomy was significantly related to PCTCR. Extraverts (Es) were higher than introverts (Is) and judging (J) types were higher than perceptive (P) types. EJs were the highest and IPs were the lowest among the type groupings. Although only the EI and JP dichotomies were significant, the other differences noted followed a trend similar to that noted in the analysis using CGPA and MEGPA.

Using Method II to investigate individual type differences and academic success, none of the sixteen types scored significantly high or low on any of the dependent variables. Among the conventional MBTI groupings, the significant differences in college GPA means for NJ> SJ> SP> NP> and FJ> TJ> FP> TP> can be more parsimoniously accounted for by the JP difference. Similarly, the significant group differences EJ> EP> IJ> IP> on Percentage of Credits Passed is consistent with the E > I differences found using the Method I analysis.

In Method III, correlations of the dependent measures with the continuous MBTI preference scores were run. Table 4-42 shows there were no significant correlations between MBTI continuous scores and the three measures of academic success.

Thus, as a result of these analysis procedures, the null hypothesis was partially rejected. It was not rejected for the analysis involving Mathematics and English GPA or for any of the analysis involving Method II. It was rejected, however, for the analysis (using Method I) involving both College GPA and Percentage of Credits Passed.

The results of this analysis suggest that scholarship athletes in this study, with the above-mentioned significant type preferences and type groupings, were more likely to be successful in the traditional college environments (such as those normally found in NCAA Division I-A colleges) than those scholarship athletes whose MBTI type did not include these preferences and type groupings.

Sensing perceptives (SPs) represented an unusually high percentage (29%) in the scholarship athlete sample. Theory would predict an introverted intuitive (IN) types to score higher in both aptitude and achievement, but this was not the case in this study. Although the intuitives (Ns) had higher achievement measures than the sensors (Ss), contrary to this trend, the introverted intuitives (INs), though few in number (7) scored lowest academically. Likewise intuitive thinkers (NTs), normally a high achieving group, scored very low academically.

A separate means comparison was run (Appendix F, Table F-6) using High School GPA (HSGPA) instead of the College GPA (CGPA). The TJ> TP> FP> FJ> grouping was significant in this analysis with the FJ type also having the highest HSGPA. A pattern of mean scores within preferences and type groupings similar to that of the CGPA analysis was noted. These results lend further support the importance of high school GPA scores as predictors of college success for scholarship indicated by the earlier analysis in this study. The $\underline{z}$-score comparison with MBTI scores (Appendix F, Table F-7) as expected from earlier analysis involving SAT/ACT $\underline{z}$-scores revealed no significant relationships.

Additional means comparisons of the MBTI measures with the NCQ subscales revealed a significant relationship between Goals scores and both the EI and SN preferences with Es (extraverts) and Ns (intuitives) being positively related to the Goals subscale (Appendix F, Table F-4).

High Goals scores suggest a high level of interest in establishing and achieving long range goals. The persistence of the Es in this study and the conceptual ability of the intuitives (Ns) may help athletes with these preferences better conceptualize their goals.

In two separate supplementary analyses involving the MBTI and the Self-Concept Subscale (Appendix F, Table F-8) and the Support Subscale (Appendix F, Table F-10), both the Self-Concept scale and the Support scale had significant results within a type group. The SN-JP group was significantly related to the Self-Concept subscale with (intuitives with perception (NPs)) having the highest means. In the MBTI comparison with the Support Subscale the TF-JP grouping was significant with feeling with judging (FJ) types having the highest Support scores.

No significant MBTI differences were obtained using the Community Service subscale. High scores on this subscale indicate more active involvement with the larger community (Appendix F, Table F-11).

Using the Self-Concept subscale, where high scores reflect positive self-esteem, there were significant results (Appendix, Table F-3). The SN-JP group was significantly related to the Self-Concept subscale with intuitives with perception (NP) types had the highest mean Self-Concept scores.

In the MBTI comparison with the Support subscale (Appendix F, Table F-10) the TF-JP grouping was significant with FJs reporting the highest Support scores. High Support scores on this scale indicate the presence of a strong support system. This study suggests that the J types were more likely to achieve academic success on two of the measures used in this study. Consistent with the Fs greater need for personal support within their learning environment, the FJ type may be able to take best advantage of the high level of support within their athletic environment but their numbers (3) were limited in this study.

Hypothesis #6a

> Type distribution of scholarship athletes will not differ significantly from type distribution of male University of Florida students (class of 1971).

A chi-square procedure using the Selection Ratio Type Table (SRTT) program, designed especially for comparison of MBTI type distribution was used to compare the a single college independent sample with the research sample of University of Florida (1971 male freshman) in this hypothesis (see Appendix G, Table G-1).

Significant differences were noted in Hypothesis 6a among several MBTI Types (Table 4-43). Scholarship athletes had significantly higher percentages of ISTP, ESTP and ESTJ types than in the comparable 1971 University of Florida sample. Significantly lower percentages of ENFPs and INFPs were found in the study sample than in the University of Florida research sample. The 1971 University of Florida sample had nearly evenly divided EI, SN, TF and JP preferences. The scholarship athletes had significantly more sensing (S) types (73%) and thinking (T) types (86%). Thus the null hypothesis for 6a was rejected.

Hypothesis #6b

> Type distribution of scholarship athletes will not differ significantly from type distribution of college students combining all male college student samples in the MBTI Atlas of Types.

In comparing the traditional-age male college student sample in the MBTI Atlas of Type (Appendix G, Table G-2) and the scholarship athlete sample, there was a significant difference in the frequency of the ISTP type. ISTP types had significantly greater representation in the scholarship athlete group than in the composite research sample of traditional-age male college students. However, unlike the comparison

Table 4-43: MBTI Type Table: Comparison of Scholarship Athletes with Male University of Florida Sample

ISTJ N = 8 % = 11.43 I = 1.50	ISFJ N = 1 % = 1.43 I = 0.25	INFJ N = 0 % = 0.00 I = 0.00	INTJ N = 2 % = 2.86 I= 0.50
ISTP * N = 17 % = 24.29 I = 6.03	ISFP N = 3 % = 4.29 I = 0.80	INFP £ N = 0 % = 0.00 I = 0.00	INTP N= 5 % = 7.14 I = 1.17
ESTP * N = 7 % = 10.00 I = 3.79	ESFP N = 2 % = 2.86 I = 0.49	ENFP £ N = 1 % = 1.43 I = 0.12	ENTP " N = 8 % = 11.43 I = 2.23
ESTJ # N = 12 % = 17.14 I = 2.40	ESFJ N = 1 % = 1.43 I = 0.22	ENFJ N = 2 % = 2.86 I = 0.50	ENTJ N = 1 % = 1.43 I = 0.29

	N	%	I
E	34	48.57	0.97
I	36	51.43	1.03
S	51	72.86	1.63*
N	19	27.14	0.49*
T	60	85.71	1.98*
F	10	14.29	0.25*
J	27	38.57	0.81
P	43	61.43	1.18
IJ	11	15.71	0.67
IP	25	35.71	1.35
EP	18	25.71	1.00
EJ	16	22.86	0.94
ST	44	62.86	2.93*
SF	7	10.00	0.43#
NF	3	4.29	0.13*
NT	16	22.86	1.05
SJ	22	31.43	1.16
SP	29	41.43	2.32*
NP	14	20.00	0.58"
NJ	5	7.14	0.34£
TJ	23	32.86	1.29
TP	37	52.86	2.95*
FP	6	8.57	0.25*
FJ	4	5.71	0.25£
IN	7	10.00	0.37#
EN	12	17.14	0.61"
IS	29	41.43	1.83*
ES	22	31.43	1.42

N = 70

Legend: % = Percent of total choosing this group who fall into this type.
I = Self-selection index: Ratio of percent of type in group to % in sample.
" implies significance at the .05 level, i.e., Chi-square > 3.8;
# implies significance at the .01 level, i.e., Chi-square > 6.6;
* implies significance at the .001 level, i.e., Chi-square > 10.8.
_ (underscore) indicates Fisher's exact probability used instead Chi-square.

Base population used in calculating selection ratios:
College freshman-male
Base total N = 1441. Sample and base are independent.

```
* * * * Calculated values of Chi-square or Fisher's exact probability * * * *
      Type table order
                                             E  0.0685 IJ  2.2525 SJ  0.6626 IN 10.1666
 1.3354    0.1757    0.0702    0.4282   I  0.0685 IP  2.9707 SP 24.2169 EN  3.9258
                                             S 21.1022 EP  0.0000 NP  6.1013 IS 13.1342
58.0926    0.7962    0.0044    0.7969   N 21.1022 EJ  0.0894 NJ  0.0055 ES  3.2420
                                             T 48.4644 ST 63.9486 TJ  1.9424
12.5251    0.4286    0.0063    5.1515   F 48.4644 SF  6.8035 TP 51.9084
                                             J  2.3215 NF  0.0000 FP 19.8432
 9.4845    0.1250    0.4283    0.2527   P  2.3215 NT  0.0388 FJ  0.001
```

in Hypothesis #6a this was the only one of the sixteen types in the composite sample comparison where significant differences were noted.

In the composite research sample ISTPs represented only 6.81% of the total sample. The self-selection index (I) indicating ratio of percent of ISTP type in the composite college research sample compared with the study sample was 3.57 (Table 4-44).

As with the sample used in Hypothesis #6a, the EI preference was almost evenly divided in both the research and the study sample. The judging perceptive (JP) dichotomy was significant in this comparison as well as the SN and TF dichotomies that were also significant in the Hypothesis #6a comparison. In addition to being significantly more sensing (S) and thinking (T), scholarship athletes had significantly more (p .05) perceptive (P) types (61.43%) than the composite sample (47%) of the 12,637 traditional-age male college students in the research sample.

There were also significantly greater percentage of sensing with perception (SP) types among the scholarship athlete group SPs represented 41% of the scholarship compared to 22.02% in the composite research sample (p .001). Thus, the null hypothesis for Hypothesis #6b was rejected. This concludes the analysis of the research hypotheses in this section.

Discussion of Results

This study was designed to test Tinto's theoretical model of dropout prevention. Tinto's theory suggests that there are personal and social as well as academic factors that prevent dropout and thus contribute to the academic success of college students.

Tinto's theoretical model used the basis for this study suggests that personal and social conditions (internal and external factors), as well as academic factors are related to students' academic success in college. The personal factors used in this study were race,

Table 4-44: MBTI Type Table: Comparison of Scholarship Athletes with National Composite Sample of Traditional Male College Students

ISTJ N = 8 % = 11.43 I = 0.92	ISFJ N = 1 % = 1.43 I = 0.26	INFJ N = 0 % = 0.00 I = 0.00	INTJ N = 2 % = 2.86 I= 0.53
ISTP * N = 17 % = 24.29 I = 3.57	ISFP N = 3 % = 4.29 I = 1.05	INFP N = 0 % = 0.00 I = 0.00	INTP N= 5 % = 7.14 I = 1.08
ESTP N = 7 % = 10.00 I = 1.49	ESFP N = 2 % = 2.86 I = 0.65	ENFP N = 1 % = 1.43 I = 0.23	ENTP N = 8 % = 11.43 I = 1.69
ESTJ N = 12 % = 17.14 I = 1.34	ESFJ N = 1 % = 1.43 I = 0.26	ENFJ N = 2 % = 2.86 I = 0.96	ENTJ N = 1 % = 1.43 I = 0.25

	N	%	I
E	34	48.57	0.95
I	36	51.43	1.05
S	51	72.86	1.25"
N	19	27.14	0.65"
T	60	85.71	1.35*
F	10	14.29	0.39*
J	27	38.57	0.73"
P	43	61.43	1.31"
IJ	11	15.71	0.61"
IP	25	35.71	1.56"
EP	18	25.71	1.06
EJ	16	22.86	0.85
ST	44	62.86	1.62*
SF	7	10.00	0.52"
NF	3	4.29	0.25#
NT	16	22.86	0.93
SJ	22	31.43	0.87
SP	29	41.43	1.88*
NP	14	20.00	0.80
NJ	5	7.14	0.42_
TJ	23	32.86	0.90
TP	37	52.86	1.96*
FP	6	8.57	0.43"
FJ	4	5.71	0.35_
IN	7	10.00	0.50"
EN	12	17.14	0.79
IS	29	41.43	1.44*
ES	22	31.43	1.07

N = 70
Legend: % = Percent of total choosing this group who fall into this type.
I = Self-selection index: Ratio of percent of type in group to % in sample.
" implies significance at the .05 level, i.e., Chi-square > 3.8;
* implies significance at the .001 level, i.e., Chi-square > 6.6;
# implies significance at the .01 level, i.e., Chi-square > 10.8.
_ (underscore) indicates Fisher's exact probability used instead Chi-square.

Base population used in calculating selection ratios:
Male Traditional Age College Students-MBTI Atlas
Base total N = 12637. Sample and base are independent.

```
* * * * Calculated values of Chi-square or Fisher's exact probability * * * *
      Type table order
                                          E  0.1900 IJ  3.8147 SJ  0.6829 IN 4.3633
 0.0704   0.1847    0.2663   0.4393 I  0.1900 IP  6.5261 SP 15.2133 EN 0.8812
                                          S  6.1429 EP  0.0928 NP  0.9200 IS 5.3946
33.1054   1.000     0.0529   1.0000 N  6.1429 EJ  0.6154 NJ  0.0351 ES 0.1383
                                          T 14.9673 ST 16.9231 TJ  0.3928
 1.1933   0.5938    0.1307   2.3909 F 14.9673 SF  3.9387 TP 23.7235
                                          J  5.8194 NF  0.0067 FP  5.7559
 1.1673   0.1848    1.0000   0.1297 P  5.8194 NT  0.1113 FJ  0.0140
```

socioeconomic status (SES), goals, self-esteem, and learning styles. The social factors were support and community service. Two precollege academic factors, High School GPA (HSGPA) and SAT/ACT z-scores were also included.

The Myers-Briggs Type Indicator (MBTI) was used to measure learning styles of the scholarship athletes. The Non-Cognitive Questionnaire (NCQ) was used to measure the remaining variable. Academic data were obtained from university records.

After examining the interaction between race and SES, each set of variables, preacademic, learning style, and other non-cognitive variables were added to the linear equation to see if they were significantly related to each of the dependent variables. Several comparisons between the MBTI and these variables as well as to two research samples were also made as part of the analysis for this study.

College GPA (CGPA), Mathematics and English GPA (MEGPA), and the Percentage of Credits Passed (PCTCR) were used as the three dependent measures in this study. These dependent variables represent early indicators of different aspects of the scholarship athletes' ability to be a successful college student.

College GPA (CGPA) is the traditional measure of college success used in most studies of student academic success in college. Because scholarship athletes may take more remedial courses initially and often take less challenging academic courses during their playing season, a measure of their success in the more challenging Mathematics and English courses (MEGPA) was also used. Finally, Percentage of Credits Passed (PCTCR) was used as a third dependent variable. This measure is more focused on the persistence aspect of college success than the more achievement-oriented measures of College GPA and Mathematics and English GPAs.

Race and Socioeconomic Status

The results of this study lend support to the importance of race as a factor influencing success among scholarship athletes (N=70) when only race and socioeconomic status (SES) were compared with the success measures used in this study. Race was significant when compared with College GPA (CGPA) and Mathematics and English GPA (MEGPA). Being white was positively related to two of the three measures of academic success (CGPA and MEGPA). White scholarship athletes achieved higher college GPAs and Mathematics and English GPAs than non-whites. These results are also consistent with other studies of success in the general student population using College GPA (Bennett & Bean, 1984; Pascarella, 1991; Tracey & Sedlacek, 1984) and in athlete populations (Leach & Conners, 1984; Picou, 1978; Sedlacek & Adams-Gaston, 1989).

Socioeconomic status (SES), however, was also non-significant when included as a factor along with race. Most of the variance was accounted for by the race factor.

Adler and Adler (1991) concluded that structural factors within the university system cancel out much of the effect of socioeconomic factors among the athletes they studied. This could help to explain the results of this study as well. Although all socioeconomic levels were represented in this study, the majority (58.1% of white and 52.6% of non-white) were in the two middle SES categories (Table 4-7). Additionally, as seemed evident in an earlier studies (Hauser & Lueptow, 1978), as well as Adler and Adler (1991) found that there was a lack of very low SES back ground among the athletes they studied. This relative similarity of socioeconomic status (SES) between the white and non-white group in this study may also help to explain the lack of significance of the SES factor. The mean SES (levels 1 to 4) for white scholarship athletes was 2.67. The mean SES for non-white scholarship athletes was 2.45 (Table 4-9).

Preacademic Factors

When High School GPA (HSGPA) was added to race in Hypothesis #2, HSGPA accounted for so much of the variance in the equation that it was the only significant factor until all the other variables were included. The significance of high school grades has already been demonstrated in studies of the general college population (Astin, 1975; Pascarella & Terenzini, 1991; Tinto, 1987). However, the lack of significance of the other preacademic factor of SAT/ACT scores in any of the equations raises questions about the value of SAT/ACT scores as predictors of success for scholarship athletes as has also been questioned by other researchers (Astin, 1975; Tinto, 1987; Tracey & Sedlacek, 1984, 1985, 1987).

The two personal background factors of High School GPA (HSGPA) and race which were significant in this study do not negatively influence selection of scholarship athletes as much as they influence the selection of most students into college. Nevertheless, the preacademic factor of High School GPA was significantly related to the level of academic success of scholarship athletes with two of the three academic measures of success used in this study: College GPA and Mathematics and English GPA. The results support studies that indicate that race and high school grades continue to be major factors contributing to the academic success of scholarship athletes (Edwards, 1983; Roper & Snow, 1976; Purdy, 1980) as they are of college students in general (Astin, 1975; Pascarella & Terenzini, 1991; Tinto, 1975, 1987). Thus, the study results suggest that scholarship athletes without good high school preparation would have greater difficulty being successful in college.

Learning Style Differences

The results of this study also suggest that, in addition to these traditional precollege predictors of college success, certain aspects of the learning styles of scholarship athletes (as measured by the MBTI) may influence their academic success in college. No significance was found when either MBTI continuous or dichotomous measures were added to the equation (Hypotheses #3a and #3b). However, when the Non-Cognitive Questionnaire subscale scores were added to the equation (Hypotheses #4a and #4b), the JP dichotomy was significant with J positively related to College GPA (Hypothesis #4b). The judging (J) preference is associated with a planned, organized lifestyle and consistent with other research related to academic success. In the larger college student samples, while J types do get better grades than Ps, intuitives with thinking (INs), who are interested in knowledge for knowledge's sake, tend to have both higher aptitude and achievement scores (Myers & McCaulley, 1985). This trend was not evident in this research with respect to the academic success measures used. The intuitives (Ns), especially the INs (7) and NTs (14) had the lowest scores on all three of the success measures.

Non-Cognitive Questionnaire Subscale Results

Four subscales of the Non-Cognitive Questionnaire (NCQ) were used in this study: Self-Concept, Goals, Support and Community Service. The lack of direct significance of any of the NCQ subscales may be related to the limited number of scholarship athletes in this study, problems with the reliability of the instrument or the lack of score variance on these scales. In addition, the majority of the scholarship athletes scored above average on all these scales. This suggests that the athletes in this study had a relatively high level of self-confidence, goal-setting skills, support and service to the community.

Analysis of the qualitative aspects of the NCQ suggested that the presence of religious support for athletes may have been a contributing factor in the high Support scores. The goal-setting experience gained through setting and achieving athletic goals may have contributed to the high scores on the Goals subscale. The lack of significance of the

Community Service subscale may have been influenced by the limited response to the written response question in this subscale. (Only 41% of the white scholarship athletes and 24% of non-white scholarship athletes responded to this question asking about organizational participation.) Of the total responses to this question only 1% of the white responses and 4% of the non-white responses noted organizations primarily involved in community service activities. The heavy time commitment to athletics may have limited the time available to scholarship athletes for community service activities.

MBTI Means Comparisons

In a separate analysis using only the MBTI, when CGPA was used as a measure of scholarship athletes' success (Hypothesis #5), both the feeling (F) preference and the judging (J) preference were positively related to College GPA. No significant results were obtained using Mathematics and English GPA (MEGPA). However, when Percentage of Credits Passed (PCTCR) was the dependent variable, there was a significant positive relationship with both the extraversion (E) and judging (J) preferences.

Separate means comparison using High School GPA and SAT/ACT *z*-scores instead of college GPA (CGPA) were computed. The High School GPA comparison showed similar trends to the CGPA comparison, although only the TF-JP grouping was significant with FJs continuing to have the highest mean GPA. There were no significant results with SAT/ACT *z*-score comparisons with the MBTI measures.

Additional means comparisons of the MBTI measures with the NCQ subscales revealed there was a significant relationship between Goals scores and both the EI and SN preferences with Es (extraverts) and Ns (intuitives) being positively related to the Goals subscale. This suggests that Es and Ns were more interested in establishing and implementing long range goals than introverts (Is) and sensors (Ss).

No significant results were obtained in the comparison with the Community Service subscale but both

Specific MBTI Types were found to be over-represented among scholarship athletes in this study when compared to a comparable single college sample and a composite sample of college males. The ISTP type was over-represented among scholarship athletes in both comparison groups. ISTP is one of the least common types found in college samples (Myers & McCaulley).

The ISTP, ESTP and ESTJ types were significantly over-represented in the traditional-age male athlete group compared to the comparable single college sample of University of Florida freshman male college students. All of these types received below average grades when college GPAs are used as the measure of academic success among liberal arts college students (Myers & McCaulley, 1985).

The predominance of the sensing (S) type in the study group suggests that scholarship athletes are more likely to prefer an active learning environment that allows them opportunities to apply the knowledge and skills being taught. This is not typical of most college instruction which tends to emphasize theoretical concepts, ideas and symbols.

The positive relationship of the feeling (F) preference of the MBTI to academic success suggests that scholarship athletes are more likely to be successful if what they are learning is relevant to their lives and they have instructors who take a personal interest in them (such as their coaches certainly do). These results are consistent with theory and with the results of other studies of academic success involving the MBTI (Anchors, 1989; Lawrence, 1982; Myers & McCaulley, 1985; Schurr & Ruble, 1986).

The sensing (S) and thinking (T) preferences were significantly over-represented in both Hypothesis #6a and #6b (Tables 4-43 and 4-44). This means that the scholarship athletes in this study reported they were more likely to prefer an action-oriented, hands-on, practical learning environment using the sensing (S) preference. The preference for thinking (T) means that these athletes would like courses involving logical thinking skills such as mathematics courses. The fact that their scores on the SAT-Mathematics test are closer to the norms than their SAT-Verbal scores lend support this conclusion.

The implication of these results are that sensing with thinking (ST) types were the most common type group found among the scholarship athletes in this study, but they are much less common among traditional-age male college students in general. The learning style of ST type is much different than the intuitive with thinking (NT) and the intuitive with feeling (NF) types found more commonly on college campuses and requires a different learning environment for academic success.

The learning strengths of the ST type group include their ability to learn and memorize facts, and follow step by step procedures. Using their sensing (S) preference, they like to learn from specific facts to general theory and enjoy seeing concrete and practical results of their efforts. They appreciate specific and exact assignments from their instructors. Using their thinking (T) preference, they like to use their logical reasoning skills, enjoy critiquing and debating ideas and appreciate fairness and subject matter expertise in their instructors.

In general, the ST types prefer what is real and tangible, rather than what they can imagine or see as a future possibility. They like to apply their logical analysis skills to practice rather than to theory. They often chose careers such as business, engineering, medicine and law that provide greater opportunities for action-oriented or hands-on activities that also make use of their analytical abilities.

The perception (P) preference was significantly over-represented when compared to the composite research sample of traditional-age, male college students (Hypothesis #6b). The strengths of the perceptive (P) types are their ability to handle pressure and their ability to be spontaneous and flexible. Ps are able to juggle several projects at once. They appreciate teachers who create interest and excitement in the classroom and allow them freedom, but who also set assignment deadlines to stimulate them into action.

These type and preference comparison results suggests that male scholarship athletes in this study have some significantly different learning style characteristics, as measured by the MBTI, than male college students in general. These results are consistent with the findings of Schurr and his various colleagues (Nisbet et al., 1982; Schurr et al., 1986) who also used the MBTI in studies involving both athletes and other high-risk college student groups.

The sensing with perception (SP) combination types, the sensing with reception (ST) types, and the thinking with perception (TP) type groupings of scholarship athletes in this study were significantly over-represented (p .001) in both the single and composite sample comparisons (Hypotheses #6a and #6b). Sensing types tend to rank near or below average in college GPA among liberal arts majors (Myers & McCaulley, 1985).

The interests and learning style preferences of the sensing with perception (SP) types also do not match those required in most traditional college settings. SPs prefer learning conditions that are more practical, and action-oriented and less structured than most college programs currently provide. They also prefer to experience what they learn rather than read about it.

The interests and learning style preferences of sensing with perception (SP) types also do not match those required in most traditional college settings. SPs prefer learning conditions that are more practical, and action-oriented and less structured than most college programs currently provide. They also prefer to experience what they learn rather than read about it.

The thinking with perception (TP) types that were over-represented in both Hypothesis #6a and #6 prefer logical, impersonal approaches to material and enjoy debate. They admire instructors who demonstrate their expertise and treat them fairly. They also like freedom and flexibility in their assignments and can work well under pressure.

Relationship of Study Results to Theory

The general results of this study differ from several studies based on Tinto's theoretical model (Ellison et al., 1973; Nettles et al., 1986; Pascarella & Terenzini, 1975). These researchers have suggested that students' personal and social conditions contribute to the success of students in college.

The unique personal and social conditions of the scholarship athlete group being studied, however, may have contributed to these results. Male scholarship athletes are chosen because they have certain personal conditions already present (e.g., they have achieved specific athletic goals and they have gained self-confidence as a result of their athletic goal achievements). Once recruited, they live under relatively controlled social conditions which provide high levels of support. They also participate in a unique kind of community service within the university in the form of their athletic participation, and as a result, have very limited time available for other types of community involvement.

Perhaps the most significant finding of this study was the extreme differences in type preferences between male scholarship athletes and the general male college population. The sensing (S) and perceptive (P) type preferences which dominated the athletes' group suggest that changes need to be made in the learning conditions of educational institutions if athletes are to have the opportunity to be as successful academically as they are athletically. The active, applied nature of their learning style and the ability to be spontaneous and to adapt to new situations and the constantly changing dynamics of their sports activities also represent the ideal academic learning conditions for these traditional-age male scholarship athletes in their academic environment.

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the personal and social conditions described in Tinto's (1987) theoretical model of dropout prevention that are related to three defined measures of academic success: College GPA (CGPA), Mathematics and English GPA (MEGPA) and Percentage of Credits Passed (PCTCR). Male scholarship athletes in the income-producing college sports of football and basketball (hereinafter known as scholarship athletes) were used as the subjects for this study. The study had two major objectives. The first objective was to provide a test of Tinto's theory of dropout prevention within this special group. The second objective was to provide information for higher education administrators on how these personal and social conditions may be related to the three dependent measures of academic success for the scholarship athlete.

Tinto's theoretical model suggests that personal and social conditions (internal and external factors), as well as academic factors are related to students' academic success in college. The personal conditions examined in this study were race, socioeconomic status (SES), self-concept, goals and learning styles. The social conditions were support and community service. Two precollege academic measures: High School GPA (HSGPA) and SAT/ACT $\underline{z}$-scores were also used as independent variables.

The Myers-Briggs Type Indicator was used to identify the learning styles of the scholarship athletes. The Non-Cognitive Questionnaire was used to measure the other personal and social variables used in this study. The academic measures used in this study were obtained from university records.

Conclusions and Policy Implications

This study examined personal and social conditions along with precollege academic factors related to the academic success of scholarship athletes (N=70) using Tinto's theoretical model of dropout prevention. The conclusion and policy implications of this study are discussed below:

Scholarship athletes who had higher academic success were significantly more likely to be white (Hypothesis #1), to have had higher grades in high school, (Hypothesis #2) and on the Myers-Briggs Type Indicator (MBTI) to prefer an orderly, responsible style (J-type) when all variables were included in the final liner equation (Hypothesis #4b). The Non-Cognitive Questionnaire (NCQ) scores fell generally within the high end of the scoring range for all for subscales used in the analysis. Tinto's theoretical model suggests that high scores in the areas measured by the NCQ contribute to academic success. The NCQ scores were not significant in any of the analysis performed probably, because of lack of score variance, but did influence the significance of the judging (J) dichotomous preference when included (Hypothesis #4b).

The significant predictors of academic success related to the learning styles of scholarship athletes (as measured by the MBTI), without the other variables included, were not always similar for all three dependent variables but the general trend were that judging (J) types and feeling (F) types had higher mean scores on the academic success measures (Hypothesis #5). This contrasts with the fact that the opposite preferences of thinking (T) and perception (P) were over-represented among the scholarship athletes when compared to larger research samples of traditional-age male college students (Hypotheses #6a and #6b).

Although race was significant in the initial hypothesis, socioeconomic status (SES) was not. SES, based on parents' occupation data on the Non-Cognitive Questionnaire, was representative of all occupational levels from unemployed to professional with the majority of occupations (55.1%) falling into the semi-skilled and skilled occupation groups.

The Percentage of Credits Passed (PCTCR) was a measure of persistence rather than achievement. One explanation for the low score variation on the PCTCR variable (90% passed 85% or more of credits attempted) may be that scholarship athletes must maintain a full-time student course load in order to retain their scholarship and be eligible to play. The lack of significance of this variable in Hypotheses #1, #2, #3a, #3b, #4a and #4b may be related to the low variation in percentages on the PCTCR measure. An additional consideration may be that different conditions, not identified in this study, may be better predictors of this measure of success. Thus, further research is needed, perhaps of a qualitative nature, to identify those factors which contribute to college persistence.

The following is a summary of the specific conclusions and policy implications for educational administrators that can be drawn from the results of each hypothesis in this study:

Hypothesis #1

> There is no relationship between each of the measures of academic success of scholarship athletes and the personal background factors of athletes' race and their family socioeconomic background (using parents' occupation from the Non-Cognitive Questionnaire).

Race, but not family socioeconomic status (SES) contributed significantly to scholarship athletes' college success as measured by College GPA (CGPA), Mathematics and English GPA (MEGPA) or Percentage of Credits Passed (PCTCR). White scholarship athletes were more successful than non-white athletes. Among the white scholarship athletes in this study 90.6% were maintaining a 2.0 or above College GPA, while among the non-white athletes 73.7% were maintaining that average.

Similar trends were observed using Mathematics and English GPAs (MEGPA) with 87.5% of white scholarship athletes maintaining a 2.0 or above, while 56.8% of the non-white athletes were maintaining a 2.0 average at the time of the study. With respect to the Percentage of Credits Passed (PCTCR) variable, 65% completed 95% or more of the credits attempted while 44.7% of the non-white athletes completed the same percentage.

When more open access to higher education is possible, as was the case with this study sample, socioeconomic status (SES) does not influence academic success of scholarship athletes, but race does appear to influence some aspects of their academic success in college. Non-white scholarship athletes did not do as well as whites. These results may suggest policy objectives that address the need for both greater attention to college preparatory skills for non-white students and provision of a learning environment designed to increase cross-cultural understanding and reduce ethnic and racial bias.

Hypothesis #2

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores).

High school GPA (HSGPA) was by far the most significant predictor of scholarship athletes' success in college as measured by College GPAs and Mathematics and English GPAs. There is a large body of literature that supports these results as summarized in the recent literature reviews by Pascarella and Terenzini (1991) and Tinto (1987). The implication of these results is that high school GPAs should be given serious consideration when considering scholarship athletes for admission.

SAT/ACT z-scores did not contribute significantly to scholarship athletes' college success as measured by any of the three dependent variables used in this study. These results support a growing body of literature that suggest that SAT/ACT scores should be given less weight in the admissions criteria for college entrance (Astin, 1975; Pascarella & Terenzini, 1991; Tinto, 1987).

Hypothesis #3a

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores) and their continuous MBTI measures.

Continuous MBTI preference measures did not contribute significantly to the scholarship athletes' college success as measured by college GPA (CGPA) or Mathematics and English GPA (MEGPA) when added to the personal background and preacademic variables in this study.

Hypothesis #3b

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using High School GPA) and their academic aptitude (using SAT/ACT scores) and their dichotomous MBTI measures.

Dichotomous MBTI preference measures did not contribute significantly to the scholarship athletes' college success as measured by college GPA (CGPA) or MEGPA when added to the personal background and preacademic variables in this study. The results of the analysis of Hypotheses #4a, #4b, and #5 discussed below, however, identify other factors that are related to MBTI that contribute to college success.

Hypothesis #4a

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their continuous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person, and (4) Demonstrated Community Service.

Hypothesis #4b

> There is no relationship between each of the measures of academic success of scholarship athletes and the weighted linear combination of athletes' precollege academic achievement (using high school GPA) and their academic aptitude (using SAT/ACT scores), their dichotomous MBTI scores, and their scores on four subscales of the Non-Cognitive Questionnaire (NCQ): (1) Self-Concept, (2) Long-Range Goals, (3) Availability of a Strong Support Person and (4) Demonstrated Community Service.

None of the NCQ subscales used in this study to measure personal and social conditions needed for academic success in either Hypothesis #4a or #4b contributed significantly to the prediction of academic success. Their scores were generally at the high end of the NCQ score range indicating these scholarship athletes had better than average self-esteem goal setting skills, support and community involvement.

An examination of the written responses given on the NCQ, however, suggested that scholarship athletes expressed past achievements and current goals similar to those one would expect from non-athlete college students. They appeared to value their academic achievements more than their athletic ones and were striving for academic goals in their current lives. The importance of religious support was noted by several athletes even though there was no specific question on the NCQ addressing this type of support. The NCQ was developed to help identify students at-risk for academic problems so that early interventions may be made to improve students' opportunities to be successful in college. The NCQ has been used with student-athlete groups and with other non-traditional student groups.

The Non-Cognitive Questionnaire (Appendix D) was used to measure the personal and social conditions identified in this study. It may not have been extensive enough to measure the broad personal and social conditions Tinto described in his theoretical model using the limited sample in this study. To increase the effectiveness of this instrument in measuring the personal and social factors that may predict the academic success of these college students, additional questions may be needed to help identify this factor especially on the Support and Community Service subscales to reduce the likelihood of low score variation on these scales that occurred in this study. Questions for the Support subscales specifically related to religious support are also suggested by the results of this study.

The addition of the NCQ variables to the equation in Hypothesis #4b involving college GPA (CGPA), however, did result in the judging-perceptive (JP) preference being significant as well as HSGPA. The implications of these results, in relation to MBTI learning styles are that judging (J) type scholarship athletes were more likely to have high

College GPAs in the traditional college learning environments (the college settings where scholarship athletes are normally found) then perceptive (P) types. The significance of the JP preference with respect to academic success is consistent with MBTI type theory suggesting that J-types get better grades because they are more planned and organized. Their organizational interests increase the probability that, rather than procrastinate, they will complete their assignments on time.

The JP preference was found to be significant, however, only when personal and social factors measured by selected NCQ subscales are added to the equation. This result suggests that specific NCQ variables may indirectly contribute to the significance of the judging (J) type. The policy implication is that if higher education administrators can establish academic learning conditions that encourage the development of a positive self-concept, the establishment of long range goals, the provision of an environment of personal support, and the opportunity to become involved in community service activities, these conditions may contribute to the level of academic success achieved by J-types.

Unique personal and social conditions experienced by these male scholarship athletes as a group may have contributed to the lack of direct significance of the NCQ subscales as separate factors. Scholarship athletes are selected because they already have sharpened, through their athletic success, certain personal abilities that are also believed to contribute to academic success. They have a track record of setting and achieving specific goals in their sport and have gained self-confidence as a result of achieving certain athletic goals. Once in college, they benefit from a strong support system of athletic faculty and athletic peers. They also contribute uniquely to a special kind of community service within the university through their athletic involvement. However, few of them may have time for other types of community service outside their athletic realm. Thus, the special social conditions under which all of these male scholarship athletes live, once at their university, may also have contributed to the study's results.

This study further suggests that the personal and social conditions as measured by the Non-Cognitive Questionnaire (NCQ) contribute only indirectly to their success in college. More study of the conditions that provide ways for scholarship athletes to develop self-esteem, establish goals, obtain support and provide community service outside of their athletic environment appears to be needed. That such conditions prove more directly beneficial to college students' academic success has been suggested by Pascarella and Terenzini (1991) and Tinto (1987) with traditional college students; and by Sedlacek & Adams-Gaston (1989) using college athletes. Since this study was conducted, new NCAA regulations require scholarship athletes to live in dormitories not restricted to athletes. The impact of this change on scholarship athletes' level of academic success suggests a need for additional study to see whether or not academic success is enhanced under these new social conditions.

Hypothesis #5

> There is no relationship between any of the
> three defined measures of academic success and
> MBTI type measures.

None of the sixteen MBTI types were positively related to the dependent variables. However, specific type preferences and type groupings were significant for two the three measures of college success: College GPA and Percentage of Credits Passed.

Two MBTI preferences, feeling (F) and judging (J) were found to be positively related to academic success using College GPA (CGPA) as that measure of success. These findings also resulted in the feeling with judgment (FJ) type grouping to be significant using CGPA. The small number of Fs in the sample (10), however, limits the significance of the F preference results.

Judging (J) types were also positively related to academic success using Percentage of Credits Passed (PCTCR) as the measure. In addition, extraverts (Es) were significantly related to PCTCR in this equation.

No significant relationships were found between Mathematics and English GPAs (MEGPA) and the MBTI measures. However, trends in preferences similar to those preferences that were significant using CGPA were noted.

Thus, while judging (J) types were significant in two success measures CGPA and PCTCR, being an extravert (E) helped the athletes in this study persist in completing college course work. Having a preference for feeling (F) appeared in this study to have helped the athletes achieve higher College GPAs.

An additional MBTI means comparison using High School GPA (HSGPA) instead of College GPA (CGPA) in the analysis also revealed a similar pattern in the mean scores (Appendix F, Table F-6). Only the TF-JP grouping was significant, but as with the CGPA comparison, FJs had the highest mean scores in this comparison. This analysis lends support to the earlier findings in this study suggesting that High School GPA (HSGPA) is the most important predictor of college success for scholarship athletes.

No significant results were obtained in the means comparison of MBTI scores with SAT/ACT $\underline{z}$-scores (Appendix F, Table F-7). This result was consistent with the results obtained when SAT/ACT $\underline{z}$-scores were included in the linear equations for Hypothesis #2, #3a, #3b, #4a, and #4b.

Supplementary analyses that compared means of the MBTI measures with each of the NCQ subscores (Self-Concept, Goals, Support and Community Service) was also done (Appendix F, Tables F-8 of F-11). The results were generally consistent with MBTI type theory and the findings of this study.

Means comparison analysis of the MBTI with Self-Concept scores showed intuitives with perception (NPs) having the highest Self-Concept scores (Appendix F, Table F-8). These results may be related more to the athletes' perceptions of their athletic abilities than their academic ones since NPs did not do well on the academic measures used in this study. The results are consistent with MBTI type theory related to intuitives with perception (NPs). NPs tend to be independent spirits who can conceptualize and see the big picture.

The (long range) Goals subscale means comparison with the MBTI measures (Appendix F, Table F-9) revealed that intuitives (Ns) were more likely to have higher Goals scores along with the extravert (E) types. This is consistent with the Ns more conceptual and future-oriented interests. The significance of the extraverts (E) may be related to these scholarship athletes' ability to express their goals. The earlier noted association of Es with the academic persistence measure (Percentage of Credits Passed) in this study suggests that having the E preference may also aid athletes in their pursuit of long range goals. This conclusion is not supported by other studies, however.

The means comparison involving the NCQ Support subscale and MBTI measures showed feeling with judgment (FJ) types and the introverts with perception (IP) types having the highest mean scores. The success of the Js on two of the three measures in this study combined with the generally high level of support reported by the athletes on the NCQ, may give FJs with their interest in receiving and providing support as well as a concern for planning and organizing their time, the ability to take best advantage of these conditions.

A means comparison of the NCQ Community Service subscale with MBTI measures produced no significant results (Appendix F, Table F-11). As the Hypotheses #4a and #4b, there were no significant results when the Community Service subscale was included in these equations.

The policy implication of these results is that educational administrators need to give greater attention to the learning needs of the ST and SP types which predominated in this male scholarship athlete group. Such attention may suggest ways to help both athletes and their instructors interact to provide positive conditions for learning.

Hypothesis #6a

> Type distribution of scholarship athletes will not differ significantly from type distribution of male University of Florida students (class of 1971).

There was a significant difference between scholarship athletes and a comparable single college and a broader composite sample of college students from the MBTI research data bank. ISTPs, ESTJs, ESTPs, ENTPs and ISTP were over-represented in the study sample compared with a similar single college sample of male college students. ENFPs were significantly under-represented in this sample.

ISTPs were over-represented when compared with both the single and composite college sample. Similar trends in type preferences and type groupings between the single college sample and the composite college sample (Hypothesis #6b) are discussed in the next section.

Hypothesis #6b

> Type distribution of scholarship athletes will not differ significantly from type distribution of college students combining all male college student samples in the MBTI Atlas of Types.

There is a significant difference between scholarship athletes and a composite sample of college students from the MBTI Atlas of Type (MBTI research data bank). ISTPs were also over-represented in the study sample when compared with the composite sample of traditional age, male college students that contained more recent data than the (1971) single college sample used in Hypothesis #6a where this type was also over-represented.

The results showed that sensing (S) and thinking (T) are the most common preferences found among the 70 scholarship athletes in this study. They were much less common among traditional-age, male college students used for comparison in both Hypothesis #6a and #6b. Thus the most common type grouping was the ST. The learning style of ST is much different than the intuitive with thinking (NT) and the intuitive with feeling (NF) types found more commonly on college campuses. STs require a different learning environment for success. Since ST types predominated over NT and NF types in both the single college and composite college comparisons, helping scholarship athletes who are STs to select courses in fields that have a better fit with their natural interests may help scholarship athletes improve their chances of success in college. For example, STs are often found to be interested in business, engineering, medicine and law.

Providing ST scholarship athletes with the help they need to take better advantage of their learning strengths in courses not geared to these strengths could also improve their opportunities for college success. Identifying instructors who are open to alternative assignments and presenting material in a variety of ways are more easily possible when students know their own learning style. Individual and small group tutoring may help to provide these conditions. Several scholarship athletes noted the value of these services in the comment section at the end of the NCQ (Appendix D).

This researcher's experience in tutoring athletes is consistent with these research results. Allowing students opportunities for oral debate and discussion (T) and providing opportunities for more action-oriented (S) assignments were more effective ways for STs to demonstrate their learning than written papers (N). Audio-visual materials and small group activities (S) were more effective ways to present materials than lectures and reading assignments that required extensive note taking (N). When more traditional lecture strategies were necessary, beginning with a specific situation (T) relevant to scholarship athletes current lives (S) and then relating the theory to the situation was more effective than beginning with the conceptual aspects (N) of the material. When extended reading was necessary, assigning one or more problems relevant to them currently (S) helped them find a focus for their reading. Giving detailed instruction was important as was carefully defining grading criteria (T).

Other behaviors of scholarship athletes observed by the researcher (such as their highly emotional responses to some types of information, the value they appeared to place on teacher and coaching support and recognition of their efforts) suggested a feeling (F) preference rather than a thinking (T) preference. These observations, however, may have been the result of cultural differences and more conservative religious values.

The over-representation of the perceptive (P) among scholarship athletes' in Hypothesis #6b was also evident in the researcher's teaching experiences with scholarship athletes. Scholarship athletes were definitely spontaneous and fun loving in the classroom and enjoyed frequent changes in learning activities. They had difficulty planning ahead (for example, to study for a test) but the pressures of deadlines appeared not to bother them. Thus, the researcher's own observation of scholarship athletes learning preferences were generally confirmed by the result of this study.

Specific learning style preferences (using MBTI type measures) of traditional-age male scholarship athletes have been shown in this study to be significantly different from other similar-age male college students in both Hypothesis #6a and #6b. Providing incentives to develop learning environments conducive to scholarship athletes learning styles could provide an avenue for improving their overall levels of academic success. Non-athlete SPs could also benefit from this teaching strategy.

A policy recommendation for a way to accomplish this could be for college athletic associations to provide stipends to instructors who wish to adapt their teaching strategies to better incorporate the learning needs of the specific learning styles that predominate among scholarship athletes as revealed in this study. In addition to improving scholarship athletes' academic success, athletic associations would also be broadening opportunities for academic success for other students with learning style preferences similar to those of scholarship athletes.

Summary

The sample of college athletes selected for this study was chosen not only because of the current concerns about the opportunities for scholarship athletes to also be successful students, but also because their past record of academic success, in general, has been very low.

This study has examined the influence of personal and social conditions as well as precollege academic factors that may influence the academic success in college of male scholarship athletes in income-producing sports. Tinto's theoretical model of dropout prevention was used as a basis for examining the precollege academic factors as well as the personal and social conditions that might contribute to these athletes' academic success. The results suggested several policy implications for higher education administrators.

This study found that many of the conditions known to influence academic success among general college students such as race and high school GPA also influenced the academic success of these scholarship athletes. It raises, however, some questions about the value of SAT/ACT scores as predictors of success for scholarship athletes as has been suggested in other studies of college students in general.

Scholarship athletes' had generally high scores on the NCQ subscales (Self-Concept, Goals, Support and Community Service). These results may have contributed indirectly to scholarship athletes success when these variables were combined with the judging (J) preference of the MBTI and their higher high school GPAs.

Percentage of Credits Passed (PCTCR) used as a dependent variable does not appear to predict academic success in college for scholarship athletes using the independent variables in this study except with respect to the extravert (E) and judging (J) preferences of the MBTI. These preferences do appear to be related to the scholarship athletes' ability to be successful using this persistence measure of success.

Two MBTI preferences, feeling (F) and judging (J) were found to be positively related to academic success using College GPA (CGPA) as that measure of success. The small number of Fs in the sample (10), however, limits the significance of the results of this preference to CGPA. Intuitive with judgment (NJ) and feeling with judgment (NJ) type groups were positively related to CGPA.

The 70 male scholarship athletes have personality type preferences significantly different from comparable traditional-age male college student samples. Scholarship athletes were predominantly sensing (S), thinking (T) and perceptive (P) types. Scholarship athletes' need for action-oriented learning, with practical application (S), their spontaneity (P), and their desire for specifity of assignments (T) are consistent with MBTI research with college athletes and the researcher's own observation while teaching scholarship athletes.

The personality type grouping most prevalent in the scholarship athlete group studied was the sensing with thinking (ST) type grouping. The prevalence of this grouping suggests that these athletes would make the best use of their learning strengths in learning environments that provide greater use of hands-on and applied learning strategies and greater use of inductive approaches to learning. Such learning conditions, clearly, are an important aspect of their athletic learning environment. The contrast between these learning condition (e.g., active, hands-on, applied learning) and the theoretical approach to learning found in most college classrooms may be a factor in their lower level of academic success.

In addition the over-representation of the sensing with perception (SP) type grouping suggests that learning conditions need to be more exciting and involve risk-taking the capture the interest of this group of scholarship athletes.

The comparison of scholarship athletes with two male traditional-age college groups showed that scholarship athletes were over-represented in type groupings (ST and SP) opposite of those type groupings with the highest means (NF and NJ) within these groupings on all three measures of college success. These MBTI personality type differences also reflect differences in learning styles between scholarship athletes and traditional-age male college students in general. The results suggest that institutions of higher education may need to provide different learning conditions to tap the academic potential of scholarship athletes. Because of the unique learning styles of the scholarship athletes, they present some special challenges for higher education administrators who wish to provide effective college learning conditions that will take advantage of scholarship athletes' learning strengths.

Male scholarship athletes, like other college students, can be helped to identify ways to use their strengths in courses not usually geared to their learning style. They can also learn to identify instructors and majors that may make use of the ways they learn best.

Clearly, however, if educational administrators want to broaden the academic learning opportunities for these scholarship athletes while in college, they need to provide incentives that will encourage an expansion of the teaching and learning conditions so that students with all learning styles are able to maximize their learning potential. Such policies will be more likely to provide equal learning opportunities for all students.

The significant variables in this study were all academic (high school GPA) factors and personal conditions (as measured by the internal factors of race and aspects of learning style), but not social conditions (as measured by the external factors of support and community service) that Tinto also considered to be important conditions influencing academic success of college students. Thus Tinto's theory is not totally supported by the results of this study. The study may not have been large enough to and the score variation on the social condition variables may not have been sufficient to identify significant differences in the social condition variables. Further refinements in the Non-Cognitive Questionnaire could help to better identify the social factors related to scholarship athletes success or a more appropriate instrument may be identified for this purpose. The following section presents some suggestions for further research on conditions related to the academic success of athletes.

Recommendations for Future Research

1. Replicate this study using a larger (regional or national) sample to determine if the results of this study are confirmed.
2. Design an experimental study of learning styles of scholarship athletes that provides a test of their learning success under controlled personal and social conditions.
3. Compare freshman and senior scholarship athletes using the MBTI to provide a means of obtaining a more differentiated understanding of the differences leading scholarship athletes to be more academically successful in college.

4. Compare the personal and social conditions needed by male and female athletes for success in college to see if there are sex differences.
5. Compare the academic success of male college athletes in football and basketball in settings providing the optimum personal and social conditions suggested in the literature as necessary for academic success, with similar athletes in college settings where these conditions are absent to see if academic success differences exist.
6. Compare non-athlete college students with a group of scholarship athletes matched by personality type to compare differences in levels of academic success between the two groups.
7. Compare male scholarship athletes in different sports to see if significant differences exist between these scholarship athlete groups.
8. Conduct a qualitative study designed to identify factors related to persistence in college among male scholarship athletes.
9. Compare male scholarship athletes' academic success while living in athletic dormitories versus general college student dorms to see if significant differences exist.

APPENDIX A
RESEARCH SUMMARIES

Table A-1: Summary of Personal Factor Related Variables

Personal Conditions	How Measured in this Study	Related Variables Used in Other Studies
Race	NCQ	Differences(white/black) Stages of ethnicity Positive interracial contact Stage of ethnicity (acceptance of)
Socioeconomic status	NCQ	Parents' occupation Financial support/resources Working over 21 hours/week (impact on study time)
Goals and Commitment	NCQ	Education/career goals Interests/educational values Attitudes Behaviors/study habits Reason for attending Intent to stay Self-selection Future orientation Role conflicts Degree aspirations Upward mobility Future orientation Long range goals
Family support (Self-esteem)	NCQ	Family support Family aspiration Quality of family life Self-congruence Ego strength Positive self-concept
Personality/ Learning Style	MBTI	Cognitive style Learning strategies Learning experience Reasoning skills Dependence/independence
Academic Background	University Records	SAT/ACT score High School GPA (HSGPA) Admission criteria (college) Academic preparation Non-traditional knowledge Precollege educational experience College prep programs

Table A-2: Summary of Social Factor Related Variables

Social Conditions	How Measured in this Study	Related Variables Used in Other Studies
Peer Support	NCQ Support Subscale	Extracurricular activities Social support/isolation Group identity Personal relationships Social leadership Living arrangements Quality of peer relationships Feedback Student culture Peer group membership Alienation Degree of peer interaction Maturity of relationships
Faculty Support	NCQ Support Subscale	Quality of faculty contact Contact outside class Role model Support person Coachability/coaching influence Degree of faculty interaction Guidance-career & personal
Institutional Support	NCQ Support Subscale	Institutional environment Competent membership Shared values Personal fit Social integration College experience Curriculum flexibility Institutional goals Institutional mission Institutional involvement
Community Support	Support and Community Service Subscales	Demonstrated community service Community support person Life experience Continued parental and peer influences Family support while in college

Table A-3: Summary of Research on Race and Academic Success

Factor	Author (Date)	Direction and Findings	Related Condition
Race SES Institution	Cross & Astin (1980)	Blacks more likely to persist in black colleges; working 21+ hrs/week negative predictor of academic success	Personal & Social
Academic prep Alienation Group identity	Dunston, et al. (1983)	Academic prep, lack of alienation & group identification positively related to academic success	Academic
Interracial contact Stage of ethnicity	Bennett & Bean (1984)	Positive interracial contact (precollege & during) having prep courses & being at a higher stage of ethnicity and lack of alienation positively related to College prep course	Personal
Precollege educational experience	Jencks (1972)	Precollege educational experience related to higher level of educational experience	Academic
Cognitive style	O'Donnell & O'Donnell (1987)	Black high school algebra students had greater symbolic & less graphic strengths than other ethnic groups	Personal
SES	Clark (1983)	SES not related to success; quality of life positively related to academic success	Personal
Financial resources	Bayer (1972)	Black college freshman has fewer financial resources than white	Personal
Achievement SES	Thomas (1981)	Low family SES & low achievement were barriers to academic success	Personal

Table A-3: Continued

Factor	Author (Date)	Direction and Findings	Related Condition
College environment	Morris, L. (1981)	Blacks more likely to attend low cost colleges	Social
SAT/ Student satisfaction with college/ Financial Social Psychological	Nettles, et al. (1986)	Academic admission criteria most predictive; college environment and personal factors also important	Academic Personal & Social
Educational aspirations of family	Epps (1983)	Review of survey research found black families had higher educational aspirations for their children than white families	Personal & Social
Educational aspirations of students	Pfieffer & McFadden (1984)	Black students had lower educational aspirations	Personal
SAT scores Degree Aspirations	Pratt et al. (1979)	Students at predominantly black universities--degree aspirations best predictor of college GPA	Personal & Academic

Table A-4: Summary of Research on Athletes

Factor	Author (Date)	Direction and Findings	Related Condition
Racial differences in educational aspiration	Picou (1978)	Athletic participation enhanced higher educational aspirations only for whites	Personal
Racial differences in non-cognitive variables	Sedlacek (1989)	Black academics success influenced more by non-cognitive variables	Personal & Social
SES Goals	Adler & Adler (1991)	Structural factors within their lives canceled out effects of SES; Educationally irrelevant goals resulted to low academic achievement	Personal
Race SES	Leach & Conners (1984)	Educational achievement less noticed in poor black families	Personal
Academic Achievement	Edwards (1983)	High rewards for athletic achievement--low rewards for academic achievement	Academic
Educational goals	Sowa & Gressard (1983)	Educational and career goals not as well defined in athletes as non-athletes	Personal
Educational Aspirations	Spady (1970)	Participation in high school sports increases college aspiration, but not skills needed for success	Personal
Goals	Kennedy & Dimmick (1987)	Athletes had less realistic goals than non-athletes	Personal

Table A-4: Continued

Factor	Author (Date)	Direction and Findings	Related Condition
Institutional involvement	Clark & Plotkin (1964)	Institutional involvement of athletes is higher which increases academic persistence	Social
Commitment to stay in college	Loy (1987)	Commitment to enhanced academic success	Personal
Sports commitment/ Family support while in college	Adler & Adler (1991)	Commitment to sports role lowered academic commitment Positively assoc. with social support but limited due to economic & environmental factors	Personal Social
Academic self-concept; race	Landers (1978) Dowell et al. (1972)	Academic self-concept not well defined; Black athletes rely on sports achievement for self-esteem	Personal
Self-esteem is team focused	Ibrahim & Morrisson (1978)	Athletes in general had lower self-esteem than non-athletes	Personal & Social
Collective vs Individual/ Future orientation	Adler & Adler (1991)	Athlete self-esteem is positive relative to team, but not self. Athletic involvement lowers future goal orientation	Personal & Social
Goal of upward mobility/ Emotional stability	Cooper (1968)	Personality factors positively related to athletes	Personal

Table A-4: Continued

Factor	Author (Date)	Direction and Findings	Related Condition
Social adjustment/ Dependent; ego strength; abstract reasoning	Schurr et al. (1977)	No single profile by sport; team sport athletes positively associated with dependence negatively associated with other factors	Personal
Reserved Conservative Traditional Critical	Omigo et al. (1979)	Characteristics of athletes vs. non-athletes	Personal
Dominance Patience	Aarmondt et al. (1982)	Football & track members more dominant, less patient	Personal
MBTI	Schurr et al. (1984)	Overall sports achievement were T's; Lineman preferred S; offensive backs, N; defensive backs, I	Personal
Peer assoc-transfer sport learning; self-esteem; congruence; guidance	Rehberg & Schafer (1968)	High achieving peer association; transfer of achievement value of from sport; high self-esteem; high self-congruence and positive guidance related to academic achievement	Personal
Athlete Participation (extra-curricular activity)	Roper & Snow (1976)	Athletic participation negatively related to academic success	Social
Participation in revenue-producing sports	Purdy et al. (1981)	Sport participation negatively related to GPA (college)	Social

Table A-4: Continued

Factor	Author (Date)	Direction and Findings	Related Condition
Athletic participation	Hurley & Cunningham (1984) Marcia (1980)	Sports participation delays adulthood	Social
Sport participation	Stevenson (1974, 1985)	Sport participation not related to socialization	Social
Sport Participation	Ryan (1989)	Positively related to inter-personal skill development	Social
Race	Warfield (1983)	Blacks enter college with lower academic and social readiness; race negatively related to social change	Academic Personal & Social
"Coachability"; Achievement of educational & career tasks & mature relationships	Sowa & Gressard (1983)	"Coachability may limit independence Athletes lower than non-athletes where differences found in developmental tasks	Social
Academic & Career goals SES	Blann (1985)	Freshman & sophomore athletes from low SES backgrounds had lower goals	Social Personal
Athletic participation	Hanks & Eckland (1978)	Athletic participation had weaker effect on academic performance than other extra-curricular activities	Social
Level of moral development	Hall (1987)	Athletes scored higher in sports specific dilemmas but failed to transfer their knowledge to academics	Social

Table A-4: Continued

Factor	Author (Date)	Direction and Findings	Related Condition
Separate dorms for athletes	Adler & Adler (1991)	Separate dorms reduces socialization with non-athlete peers; association with athletic peers discourages studying (peer pressure)	Social
Degree of interaction with faculty and other peers	Adler & Adler (1991) Rhatigan (1984) Sparent (1988)	Limited non-athletic interaction--limited involvement in learning	Personal
Coaching influences on goals and commitments	Adler & Adler (1991)	Coaching pressure negatively related to time with non-athletic peers, faculty	Social
Involvement with sports	Rhatigan (1984)	Institutional involvement limited other extracurricular activities	Social
Sport skill transfer	Adler & Adler (1991) Hall (1981) Hanks & Eckland (1978) Landers (1978) Sowa & Gressard (1987)	Lack of sport skill transfer; limited social development	Social
Community pressure	Adler & Adler (1991)	Community pressure-both positive and negative social support influences	Social
Community support	Sedlacek & Adams-Gaston (1989)	Community role models related to persistence (academic)	Social

Table A-4: Continued

Factor	Author (Date)	Direction and Findings	Related Condition
Sport participation/ Peer group membership	Balentine (1981)	Sports participation--positive & negative relations to academic success; peer group membership related to college aspirations	Social
"Major in eligibility"	Underwood (1990)	"Major in eligibility" attitude related to lack of progress	Personal & Social
Low demand majors	Edwards (1983)	Low demand major--related to poor job qualifications	Personal & Social
Sociopersonal & cultural	Warfield (1983)	Sociopersonal & cultural factors related to sport participation influence academic success	Personal & Social
Athletic success	Leach & Conners (1984)	Athletic success limits other expectations	Personal
Self-concept	Haughty (1982)	Self-concept negatively related to sports involvement	Personal
Academic achievement	Cramer (1982)	Blacks achievement required to be nearer racial norm	Academic
Academic achievement	Purdy et al. (1982)	Income producing sports had lowest academic achievement	Academic
Classroom learning experiences	Sparent (1988)	Negative classroom experiences related to teaching strategies	Personal & Social
Faculty & Community Support; Self-concept	Sedlacek & Adams-Gaston (1989)	Faculty & community support & high self-concept related to academic success	Personal & Social

APPENDIX B
MBTI DESCRIPTORS

Table B-1: MBTI Descriptors Identified in the Project As Being Relevant to Football Players

Scale	Descriptors
Extroversion (E)	Accepts environment quickly: action oriented; recharges in a group; disliked complicated procedures; visual-linear learner, interested in results; acts quickly; likes variety in assignments
Introversion (I)	Sees concept in depth; high concentration ability; reflects before acting; recharges alone; can be autonomous
Sensory (S)	Thoroughness and respect for detail; realistic; reliance on past, tested experience; practicality of action; likes established routines; patient with routine; precise
Intuition (N)	Insight and penetration into concepts; understands theory; intellectually visualizes abstractions; originality; grasp of complicated insight; ingenuity initiative; interest in possibilities; intuitive leaps
Thinking (T)	Realistic; analytic; logical; critical faculty; demands efficiency; objective, impersonal in decision-making; looks for fair treatment; reliance on fact
Feeling (F)	Aware of human interaction; sociability; grasp of group feeling; persuasive; needs praise
Judging (J)	Organized; structure reliant; wants predictability; practical; satisfied once decisions are made; oriented to conservation of energy by efficient physical action
Perceiving (P)	Adaptable, flexible, curious decisions are always negotiable; starts projects-may not finish; risk taker

Reprinted with permission from Schurr, K. T., & Ruble, V. E., & Nisbet, J. (1984) Myers-Briggs Type Inventory (sic) characteristics of more and less successful players on an American football team. *Journal of Sports Behavior*, *72*, 47-57.

APPENDIX C
INFORMED CONSENT

Personal and Social Conditions Relating to the Academic Success of Scholarship Athletes

The purpose of this research is to see if there is a relationship between academic success of college student-athletes and certain personal and social factors. In order to carry out this research you are being asked to fill in the following questionnaires: the Myers-Briggs Type Indicator and the Non-Cognitive Questionnaire.

There are no discomforts or risks to be expected from answering these questions. Instead the outcome of this study could benefit you by identifying personal learning strengths and other special skills and abilities that might relate to your academic success.

Your responses to these test will be given anonymously. Only group results will be reported. You will not be asked to give your name on any set of questions. You do not have to answer any question you do not wish to answer, however, omitting these questions may limit the value of the results to you. Information on the results of these questionnaires will be made available to you on an individual basis, if you request it, using an ID number that you will supply. There will be no payment for your participation.

This research is about academic success in college. In order to conduct this research it is necessary to compare your results on these questionnaires with the following: the percentage of degree-related courses passed; your English and mathematics grades in courses used toward your degree; your score on the CLAST test (if you have more than 60 credit hours); your GPA in degree-related courses and your SAT and/or ACT scores. The researcher will not be able to identify you individually and you do not need to supply the information. The Athletic Department has agreed to supply this information to the researcher using only the ID number, not your name. Check this box if you give your permission for this information to be provided. ☐

If you wish additional information about the procedures you may contact the principal investigator at the address below. You are free to withdraw this consent at any time.

I have read and understand the procedures described above and have received a copy of this description. My signature below indicates my willingness to participate in this study.

Sandra Chesborough
Principal Investigator
POB 90055
Gainesville, FL 32607
Ph 392-0745

Your Signature ____________________ Date ________

Witness Signature ____________________ Date ________

APPENDIX D
NON-COGNITIVE QUESTIONNAIRE

This questionnaire is designed to measure non-academic conditions that might improve your chances for college success. Results will be reported for groups only; no individuals will be identified.

Please mark your responses on this sheet by filling in the blank/s or circling the appropriate answer/s. Please print.

1. Your last six Social Security digits X X X - _ _ - _ _ _ _

2a. Your gender is: Male Female

2b. Year in college: 1st 2nd 3rd 4th 5th

2c. Sport for which you receive scholarship:______________

2d: State where you lived before college ______________

3. Your age is __________ years.

4. Your father's occupation:______________________

5. Your mother's occupation:______________________

6. Your race is:
    1. Black (African-American)
    2. White (not of Hispanic origin)
    3. Asian (Pacific Islander)
    4. Hispanic (Latin American)
    5. American Indian (Alaskan native)
    6. Other______________________________

7. How much education do you expect to get during your lifetime?
    1. College, but less than a bachelor's degree
    2. B.A. or equivalent
    3. 1 or 2 years of graduate or professional study (Master's degree)
    4. Doctoral degree such as M.D., Ph.D., etc.

8. Please list three goals you have for yourself right now:

   a. ____

   ____

   b. ____

   ____

   c. ____

   ____

9. About 50% of university students typically leave before receiving a degree. If this should happen to you, what would be the most likely cause? (Circle only one answer, please)
   1. Am absolutely certain I will obtain my degree.
   2. To accept a good job.
   3. To enter military service.
   4. It would cost more than my family could afford.
   5. Marriage
   6. Disinterest in study
   7. Lack of academic ability
   8. Insufficient reading or study skills
   9. Other____

10. Please list three things you are proud of having done:

   a. ____

   ____

   b. ____

   ____

   c. ____

   ____

Please complete questionnaire on next page.

NON-COGNITIVE QUESTIONNAIRE page 3 of 3 for Social Security
XXX - _ _ - _ _ _ _ (your last six digits only)

Instructions: Please indicate the extent to which you agree or disagree with each of the following items. Respond to the statements below with our feelings at present or with your expectations of how things will be.

Print your answer number to the left of each item.

1	2	3	4	5
STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE

___ 11. The University should use its influence to improve social conditions in the state.
___ 12. It should not be very hard to get a "B" (3.0) average at *___.
___ 13. I get easily discouraged when I try to do something and it doesn't work.
___ 14. I am sometimes looked up to by others.
___ 15. If I run into problems concerning school, I have someone who would listen to me and help me.
___ 16. There is no use in doing things for people; you only find that you get it in the neck in the long run.
___ 17. In groups where I am comfortable, I am often looked to as a leader.
___ 18. I expect to have a harder time than most students at ___.
___ 19. Once I start something, I finish it.
___ 20. When I believe strongly in something, I act on it.
___ 21. I am as skilled academically as the average applicant to ___.
___ 22. I expect I will encounter racism at ___.
___ 23. People can pretty easily change me even though I thought my mind was already made up on the subject.
___ 24. My friends and relatives don't feel I should go to college.
___ 25. My family has always wanted me to go to college.
___ 26. If course tutoring is made available on campus at no cost, I would attend regularly.
___ 27. I want a chance to prove myself academically.
___ 28. My high school grades don't really reflect what I can do.
___ 29. Please list offices held and/or groups belonged to in high school or in your community.

____________________ ____________________

____________________ ____________________

This questionnaire is trying to uncover what conditions help college students be more successful. Please comment on anything that has helped you be successful in the past, and anything else that you feel would help your academic success in the future. Please print your thoughts on the lines below and feel free to continue on the back of this page. Thank you.

____

____

* University name inserted at ___.

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APPENDIX E
TEST NORMS: NCQ and CLAST

Table E-1: NCQ Factor Norms for Blacks*

	NCQ t-Score Equivalents			
Raw Score	Self-Concept	Goals	Support	Community Service
2				19
3		13		28
4		19		37
5		25	3	45
6		31	5	54
7		37	14	62
8	4	43	20	71
9	8	48	25	
10	12	55	31	
11	17	61	36	
12	21	67	42	
13	25	73	47	
14	29		53	
15	33		59	
16	37			
17	41			
18	45			
19	49			
20	53			
21	57			
22	61			
23	65			
24	70			
25	74			
26	78			

* N = 442

** Based on University of Maryland College Sample, Fall 1979 and 1980.

Table E-2: NCQ Factor Norms for Whites*

	NCQ t-Score Equivalents			
Raw Score	Self-Concept	Goals	Support	Community Service
2				17
3		13		26
4		19	-7	36
5		25	-1	45
6		31	5	54
7		37	11	63
8	9	43	17	72
9	13	48	24	
10	17	55	30	
11	21	61	36	
12	25	67	42	
13	29	73	48	
14	33		54	
15	37		61	
16	41			
17	45			
18	49			
19	53			
20	57			
21	61			
22	65			
23	69			
24	73			
25	77			
26	81			

* N = 2,144

** Based on University of Maryland College Sample, Fall 1979 and 1980.

Table E-3: CLAST Scores

Test	N	Study		Standards	
		Mean	SD	Mean	SD
CLAST-Mathematics	52	298	23.2	311.2	26.4
CLAST-Reading	52	303	22.9	317.7	28.9
CLAST-Writing	52	301	23.1	314.5	30.7
CLAST-Essay	52	4.7	1.4	5.1	1.4

APPENDIX F

Table F-1: Hypothesis 2-3: Prediction of High School GPA (HSGPA) and SAT/ACT *z* Scores to Percentage of Credits Passed

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	2	0.01	0.01	0.89	0.4156
Error	59	0.48	0.01		
Total	61	0.50			

R-Square	C.V.	Root MSE	Dep. Mean
0.03	9.70	0.09	0.93

Source	DF	Type III SS	Mean Square	F-value	PR > F
HSGPA	1	0.01	0.01	0.93	0.3389
Z	1	0.00	0.00	0.00	0.9779

Param.	Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept	0.88	14.86	0.00	0.06
HSGPA	0.02	0.96	0.34	0.02
Z	0.00	0.03	0.97	0.01

Table F-2: Hypothesis 3a-3: Prediction of High School GPA (HSGPA) and SAT/ACT *z* Scores and MBTI Continuous Preference Scores to Percentage of Credits Passed

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	6	0.04	0.01	0.72	0.6365
Error	55	0.46	0.01		
Total	61	0.50			

R-Square	C.V.	Root MSE	Dep. Mean
0.07	9.82	.09	0.93

Source	DF	Type III SS	Mean Square	F-value	PR > F
HSGPA	1	0.01	0.01	1.24	0.1928
Z	1	0.00	0.00	0.00	0.9782
EICONT	1	0.01	0.01	1.25	0.2684
SNCONT	1	0.00	0.00	0.01	0.9036
TFCONT	1	0.00	0.00	0.62	0.4362
JPCONT	1	0.01	0.01	0.69	0.4097

Param.	Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept	0.94	7.25	0.00	0.13
HSGPA	0.00	0.98	0.33	0.02
Z	-0.00	-0.17	0.87	0.01
EICONT	0.00	-0.85	0.40	0.00
SNCONT	0.00	0.21	0.83	0.00
TFCONT	0.00	0.62	0.54	0.00
JPCONT	-0.00	-0.83	0.41	0.00

Table F-3: Hypothesis 3b-2: Prediction of High School GPA (HSGPA) and SAT/ACT z Scores and MBTI Dichotomous Preference Scores to Mathematics and English GPA

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	6	0.07	0.01	1.45	0.2109
Error	55	0.43	0.01		
Total	61	0.50			

R-Square	C.V.	Root MSE	Dep. Mean
0.14	9.48	0.08	0.93

Source	DF	Type III SS	Mean Square	F-value	PR > F
HSGPA	1	0.00	0.00	0.37	0.5476
Z	1	0.00	0.00	0.00	0.9014
EIPRF	1	0.01	0.01	3.66	0.1569
SNPRF	1	0.00	0.00	0.15	0.4560
TFPRF	1	0.01	0.01	1.11	0.2889
JPPRF	1	0.02	0.02	1.95	0.1683

Param.		Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept		0.86	14.04	0.0001	0.06
HSGPA		0.01	0.61	0.5476	0.02
Z		-0.00	-0.12	0.9014	0.01
EIPRF	E	0.03	1.44	0.1569	0.02
	I	0.00	.	.	.
SNPRF	N	-0.02	-0.75	0.4560	0.03
	S	0.00	.	.	.
TFPRF	F	0.03	0.07	0.2889	0.04
	T	0.00	.	.	.
JPPRF	J	0.03	1.40	0.1683	0.02
	P	0.00	.	.	.

Table F-4: Hypothesis 4a-3: Prediction of High School GPA (HSGPA) and SAT/ACT *z* Scores, MBTI Continuous Preference Scores and NCQ Subscales to Percentage of Credits Passed

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	10	0.05	0.00	0.56	0.8374
Error	50	0.44	0.01		
Total	60	0.49			

R-Square	C.V.	Root MSE	Dep. Mean
0.34	30.34	.69	2.67

Source	DF	Type III SS	Mean Square	F-value	PR > F
HSGPA	1	0.01	0.01	1.03	0.3159
Z	1	0.00	0.00	0.00	0.9728
EICONT	1	0.00	0.00	0.36	0.5517
SNCONT	1	0.00	0.00	0.06	0.8015
TFCONT	1	0.00	0.00	0.51	0.4770
JPCONT	1	0.01	0.01	1.91	0.3443
SELFC	1	0.00	0.00	0.23	0.6367
GOALS	1	0.00	0.00	0.22	0.6438
SUPPT	1	0.01	0.01	1.08	0.3034
CSERV	1	0.00	0.00	0.15	0.7018

Param.	Est.	T for HO	Prob.>¦T¦	Std. Error
Intercept	0.83	3.89	0.0003	0.21
HSGPA	0.02	1.01	0.3159	0.02
Z	-0.00	-0.03	0.9728	0.01
EICONT	-0.00	0.60	0.5517	0.00
SNCONT	0.00	0.25	0.8015	0.00
TFCONT	0.01	0.72	0.4770	0.00
JPCONT	-0.01	-0.95	0.3443	0.00
SELFC	0.00	0.48	0.6367	0.01
GOALS	-0.00	-0.47	0.6438	0.01
SUPPT	0.01	1.04	0.3034	0.01
CSERV	-0.01	-0.39	0.7018	0.02

Table F-5: Hypothesis 4b-3: Prediction of High School GPA (HSGPA) and SAT/ACT *z* Scores, MBTI Dichotomous Preference Scores and NCQ Scores to Percentage of Credits Passed

Source	DF	Sum of Squares	Mean Square	F-value	PR > F
Model	10	00.09	0.01	1.18	0.3265
Error	50	00.40	0.01		
Total	60	00.50			

R-Square	C.V.	Root MSE	Dep. Mean
0.19	9.59	0.09	0.93

Source	DF	Type III SS	Mean Square	F-value	PR > F
HSGPA	1	0.00	0.00	1.84	0.4409
Z	1	0.00	0.00	0.00	0.8471
EIPRF	1	0.02	0.02	3.95	0.1404
SNPRF	1	0.00	0.00	0.00	0.4382
TFPRF	1	0.01	0.01	0.01	0.2360
JPPRF	1	0.02	0.02	0.02	0.0976
SELFC	1	0.00	0.00	0.00	0.8757
GOALS	1	0.01	0.01	0.01	0.2045
SUPPT	1	0.01	0.01	0.01	0.2755
CSERV	1	0.00	0.00	0.00	0.9093

Param.		Est.	T for HO	Prob.>|T|	Std. Error
Intercept		0.82	5.50	0.00	0.15
HSGPA		0.02	0.78	0.44	0.02
Z		-0.00	-0.19	0.85	0.01
EIPRF	E	0.04	1.50	0.14	0.03
	I	0.00	.	.	.
SNPRF	N	0.02	0.78	0.44	0.03
	S	0.00	.	.	.
TFPRF	F	0.04	1.20	0.24	0.03
	T	0.00	.	.	.
JPPRF	J	0.04	1.69	0.10	0.03
	P	0.00	.	.	.
SELFC		0.00	0.16	0.88	0.01
GOALS		-0.01	-1.29	0.20	0.02
SUPPT		0.01	1.10	0.28	0.02
CSERV		-0.00	-0.11	0.91	0.02

Table F-6: MBTI Means Comparison with High School GPA

ISTJ N = 8 % = 12.70 ■■■■■■■■ Mean 2.36 SD .96 Rank 9	ISFJ N = 1 % = 1.59 ■ Mean 4.20 SD . Rank 1	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 1 % = 1.59 ■ Mean 1.90 SD . Rank 13
ISTP N = 17 % = 26.98 ■■■■■■■■■■■ ■■■■■■ Mean 2.47 SD .48 Rank 8	ISFP N = 3 % = 4.76 ■■■ Mean 2.57 SD .61 Rank 6	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 5 % = 7.94 ■■■■■ Mean 2.24 SD .34 Rank 11
ESTP N = 6 % = 9.52 ■■■■■■ Mean 2.73 SD .85 Rank 5	ESFP N = 2 % = 3.17 ■■ Mean 2.15 SD .35 Rank 12	ENFP N = 0 % = 0.00 Mean . SD . Rank .	ENTP N = 6 % = 9.52 ■■■■■■ Mean 2.27 SD .62 Rank 10
ESTJ N = 11 % = 17.46 ■■■■■■■■■■ ■ Mean 2.57 SD .72 Rank 7	ESFJ N = 1 % = 1.59 ■ Mean 3.80 SD . Rank 3	ENFJ N = 1 % = 1.59 ■ Mean 3.50 SD . Rank 4	ENTJ N= 1 % = 1.59 ■ Mean 4.00 SD . Rank 2

	N	%	Mean	SD	t or f
E	28	44.44	2.64	.77	
I	35	53.56	2.45	.67	1.00
S	49	77.78	2.57	.72	
N	14	22.22	2.44	.71	.56
T	55	87.30	2.48	.68	
F	8	12.20	2.93	.86	-1.71
J	24	38.10	2.69	.91	
P	39	61.90	2.44	.56	1.20
IJ	10	15.88	2.50	1.00	
IP	25	39.68	2.44	.47	
EP	14	22.22	2.45	.71	1.00
EJ	14	22.22	2.82	.82	
ST	42	66.67	2.52	.69	
SF	7	11.11	2.86	.89	
NF	1	1.59	3.50	.	1.36
NT	13	20.63	2.36	.67	
SJ	21	44.44	2.63	.90	
SP	28	33.33	2.52	.57	
NP	11	17.46	2.55	.48	1.41
NJ	3	4.76	3.13	1.10	
TJ	21	44.44	2.53	.85	
TP	34	53.96	2.45	.57	
FP	5	7.94	2.40	.52	4.01*
FJ	3	4.76	3.83	.35	
IN	6	9.52	2.18	.33	
EN	8	12.70	2.64	.87	
IS	29	46.03	2.51	.71	.68
ES	20	31.75	2.64	.76	
ET	24	38.09	2.60	.77	
EF	4	63.49	2.90	.90	
IF	4	63.49	2.98	.96	1.35
IT	31	49.21	2.39	.61	
S dom	17	26.98	2.58	.93	
N dom	7	11.11	2.21	.58	
T dom	34	53.96	2.52	.60	1.21
F dom	5	7.94	3.00	.74	

* N = 63

■ = 1 person

Table F-7: MBTI Means Comparison with SAT/ACT z Scores

ISTJ N = 8 % = 12.31 ■■■■■■■■ Mean -.18 SD 1.55 Rank 8	ISFJ N = 1 % = 1.53 ■ Mean 2.31 SD . Rank 2	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 1 % = 1.53 ■ Mean-1.79 SD . Rank 14
ISTP N = 17 % = 26.15 ■■■■■■■■■■ ■■■■■■■ Mean -.62 SD 1.20 Rank 11	ISFP N = 3 % = 4.62 ■■■ Mean -.89 SD .45 Rank 13	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 5 % = 7.69 ■■■■■ Mean -.65 SD .50 Rank 12
ESTP N = 6 % = 9.23 ■■■■■■ Mean .33 SD 1.67 Rank 5	ESFP N = 2 % = 3.08 ■■ Mean-1.22 SD .93 Rank 4	ENFP N = 1 % = 1.53 ■ Mean 1.51 SD . Rank 3	ENTP N = 7 % = 10.77 ■■■■■■■ Mean -.39 SD 1.64 Rank 10
ESTJ N = 10 % = 15.38 ■■■■■■■■■■ Mean .05 SD .95 Rank 6	ESFJ N = 1 % = 1.53 ■ Mean -.35 SD . Rank 9	ENFJ N = 2 % = 3.08 ■■ Mean -.02 SD .15 Rank 7	ENTJ N= 1 % = 1.53 ■ Mean 3.21 SD . Rank 1

	N	%	Mean	SD	t or f
E	30	46.15	.05	1.40	1.69
I	35	53.85	-.50	1.24	
S	48	73.85	-.26	1.29	-.27
N	17	26.15	-.18	1.49	
T	55	84.62	-.26	1.35	-.19
F	10	15.38	-.17	1.25	
J	24	36.92	.10	1.39	1.61
P	41	63.08	-.44	1.28	
IJ	10	15.38	-.09	1.69	1.56
IP	25	38.46	-.66	1.01	
EP	14	21.53	-.11	1.58	
EJ	14	21.53	.24	1.73	
ST	41	63.08	-.23	1.30	.37
SF	7	10.77	-.45	1.34	
NF	3	4.62	.48	.89	
NT	14	21.53	-.33	1.58	
SJ	20	30.77	-.05	1.27	.93
SP	28	43.08	-.49	1.28	
NP	13	20.00	-.35	1.33	
NJ	4	6.15	.34	2.09	
TJ	20	30.77	.03	1.43	1.01
TP	35	53.85	-.42	1.31	
FP	6	9.23	-.60	1.17	
FJ	4	6.15	.48	1.23	
IN	6	9.23	-.84	.65	1.14
EN	11	16.92	.17	1.72	
IS	29	44.62	-.43	1.33	
ES	19	29.23	-.01	1.21	
ET	24	36.93	.12	1.47	1.18
EF	6	9.23	-.22	1.10	
IF	4	6.15	-.09	1.64	
IT	31	47.69	-.55	1.20	
S dom	17	26.15	.02	1.60	.33
N dom	9	13.88	-.34	1.65	
T dom	33	50.77	-.31	1.23	
F dom	6	9.23	-.51	.53	

* N = 65

■ = 1 person

Table F-8: MBTI Means Comparison with Self-Concept Scores

ISTJ N = 8 % = 11.59 ■■■■■■■■ Mean 19.38 SD 1.69 Rank 11	ISFJ N = 1 % = 1.45 ■ Mean 21.00 SD . Rank 2	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 2 % = 2.90 ■■ Mean 14.50 SD .71 Rank 14
ISTP N = 17 % = 24.64 ■■■■■■■■■■■ ■■■■■■ Mean 19.65 SD 2.80 Rank 9	ISFP N = 3 % = 4.35 ■■■ Mean 19.67 SD . Rank 8	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 4 % = 5.80 ■■■■ Mean 20.25 SD .96 Rank 5.5
ESTP N = 7 % = 10.15 ■■■■■■■ Mean 20.43 SD 2.37 Rank 4	ESFP N = 2 % = 2.90 ■■ Mean 20.51 SD .81 Rank 3	ENFP N = 1 % = 1.45 ■ Mean 19.00 SD . Rank 12	ENTP N = 8 % = 11.59 ■■■■■■■■ Mean 21.38 SD 1.30 Rank 1
ESTJ N = 12 % = 17.39 ■■■■■■■■■■ ■■ Mean 20.25 SD 2.14 Rank 5.5	ESFJ N = 1 % = 1.45 ■ Mean 20.00 SD . Rank 7	ENFJ N = 2 % = 2.90 ■■ Mean 19.50 SD 2.12 Rank 10	ENTJ N= 1 % = 1.45 ■ Mean 17.00 SD . Rank 13

	N	%	Mean	SD	t or f
E	34	49.28	20.38	1.94	1.82
I	35	50.72	19.40	2.51	
S	51	73.91	19.92	2.23	.23
N	18	26.08	19.78	2.49	
T	59	85.51	19.88	2.41	.98
F	10	14.49	19.90	1.45	
J	27	39.13	19.41	2.32	1.20
P	42	60.87	20.19	2.23	
IJ	11	15.94	18.64	2.54	2.14
IP	24	36.23	19.75	2.47	
EP	18	26.08	20.78	1.77	
EJ	16	23.19	19.94	2.08	
ST	44	63.77	19.89	2.34	.08
SF	7	10.15	20.14	1.46	
NF	3	4.35	19.33	1.53	
NT	15	21.74	19.87	2.67	
SJ	22	31.88	19.95	1.89	3.86*
SP	29	42.03	19.91	2.50	
NP	13	18.84	20.85	1.34	
NJ	5	7.25	17.00	2.74	
TJ	23	33.33	19.30	2.46	.80
TP	36	52.17	20.25	2.33	
FP	6	8.70	19.83	1.60	
FJ	4	5.80	20.00	1.41	
IN	6	8.70	18.33	3.08	1.65
EN	12	17.39	20.50	1.88	
IS	29	42.03	19.62	2.38	
ES	22	31.88	20.32	2.01	
ET	28	40.58	20.50	2.06	1.33
EF	6	8.70	19.83	1.17	
IF	4	5.80	20.00	2.00	
IT	31	44.93	19.32	2.59	
S dom	18	26.08	20.00	1.88	.03
N dom	11	15.94	19.91	2.98	
T dom	34	49.28	19.85	2.40	
F dom	6	8.70	19.67	1.75	

* N = 69

■ = 1 person

Table F-9: MBTI Means Comparison with Goal Scores

ISTJ N = 8 % = 11.43 ■■■■■■■■ Mean 8.50 SD 1.20 Rank 14	ISFJ N = 1 % = 1.43 ■ Mean11.00 SD . Rank 3	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 2 % = 2.86 ■■ Mean 9.00 SD 2.82 Rank 11.5
ISTP N = 17 % = 24.29 ■■■■■■■■■■ ■■■■■■■ Mean 8.88 SD . Rank 13	ISFP N = 3 % = 4.29 ■■■ Mean 9.33 SD 1.15 Rank 10	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 5 % = 7.14 ■■■■■ Mean 9.50 SD 2.08 Rank 8.5
ESTP N = 7 % = 10.00 ■■■■■■■ Mean 9.71 SD 1.38 Rank 7	ESFP N = 2 % = 2.86 ■■ Mean 9.00 SD 2.82 Rank 11.5	ENFP N = 1 % = 1.43 ■ Mean12.00 SD . Rank 1.5	ENTP N = 8 % = 11.43 ■■■■■■■■ Mean10.86 SD 1.46 Rank 4
ESTJ N = 12 % = 17.14 ■■■■■■■■■■ ■■ Mean 9.50 SD 1.24 Rank 8.5	ESFJ N = 1 % = 1.43 ■ Mean12.00 SD . Rank 1.5	ENFJ N = 2 % = 2.86 ■■ Mean10.00 SD 2.82 Rank 5.5	ENTJ N= 1 % = 1.43 ■ Mean10.00 SD . Rank 5.5

	N	%	Mean	SD	t or f
E	34	49.28	10.03	1.55	
I	35	50.72	8.97	1.79	2.62*
S	51	73.91	9.22	1.65	
N	18	26.08	10.28	1.81	-2.29*
T	59	85.51	9.39	1.72	
F	10	14.49	10.10	1.85	-1.19
J	27	39.13	9.37	1.52	
P	42	60.87	9.57	1.89	-.46
IJ	11	15.94	8.82	1.54	
IP	24	34.75	9.04	1.92	
EP	18	26.08	10.28	1.64	2.58
EJ	16	23.19	9.75	1.44	
ST	44	63.77	9.11	1.63	
SF	7	10.15	9.86	1.77	
NF	3	4.35	10.67	2.31	2.17
NT	15	21.74	10.20	1.78	
SJ	22	31.88	9.32	1.43	
SP	29	42.03	9.14	1.83	
NP	13	18.84	10.54	1.71	2.14
NJ	5	7.25	9.60	2.07	
TJ	23	33.33	9.13	1.36	
TP	36	52.17	9.56	1.92	
FP	6	8.70	9.67	1.86	1.06
FJ	4	5.80	10.75	1.89	
IN	6	8.70	9.33	2.07	
EN	12	17.39	10.75	1.54	
IS	29	42.03	8.90	1.76	3.65*
ES	22	39.63	9.64	1.43	
ET	28	40.58	9.96	1.40	
EF	6	8.70	10.33	2.25	
IF	4	5.80	9.75	1.26	2.67
IT	31	44.93	8.87	1.84	
S dom	18	26.08	9.17	1.50	
N dom	11	15.94	10.64	1.75	
T dom	34	49.28	9.21	1.75	2.40
F dom	6	8.70	10.00	1.79	

* N = 70

■ = 1 person

Table F-10: MBTI Means Comparison with Support Scores

ISTJ N = 8 % = 11.59 ■■■■■■■■ Mean 11.50 SD 2.20 Rank 14	ISFJ N = 1 % = 1.45 ■ Mean 15.00 SD . Rank 2	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 2 % = 2.90 ■■ Mean 13.00 SD 0.00 Rank 11
ISTP N = 17 % = 24.64 ■■■■■■■■■■ ■■■■■■■ Mean 13.76 SD 1.60 Rank 7	ISFP N = 3 % = 4.35 ■■■ Mean 13.00 SD 1.73 Rank 11	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 4 % = 5.80 ■■■■ Mean 14.75 SD .50 Rank 4
ESTP N = 7 % = 10.15 ■■■■■■■ Mean 13.71 SD 1.89 Rank 8	ESFP N = 2 % = 2.90 ■■ Mean 13.00 SD 2.82 Rank 11	ENFP N = 1 % = 1.45 ■ Mean 15.00 SD . Rank 2	ENTP N = 8 % = 11.59 ■■■■■■■■ Mean 13.86 SD 1.13 Rank 6
ESTJ N = 12 % = 17.39 ■■■■■■■■■■ ■■ Mean 13.50 SD 2.07 Rank 9	ESFJ N = 1 % = 1.45 ■ Mean 15.00 SD . Rank 2	ENFJ N = 2 % = 2.90 ■■ Mean 14.50 SD .71 Rank 5	ENTJ N= 1 % = 1.45 ■ Mean 12.00 SD . Rank 13

	N	%	Mean	SD	t or f
E	34	49.28	13.71	1.70	
I	35	50.72	13.29	1.90	.97
S	51	73.91	13.31	1.97	
N	18	26.08	14.00	1.08	-1.82
T	59	85.51	13.42	1.84	
F	10	14.49	13.90	1.60	-0.77
J	27	39.13	13.00	2.11	
P	42	60.87	13.80	1.52	-1.85
IJ	11	15.94	12.09	2.17	
IP	24	34.75	13.83	1.52	
EP	18	26.08	13.76	1.56	2.90*
EJ	16	23.19	13.63	1.89	
ST	44	63.77	13.27	2.02	
SF	7	10.15	13.57	1.81	
NF	3	4.35	14.67	.58	.86
NT	15	21.74	13.87	1.13	
SJ	22	31.88	12.91	2.29	
SP	29	42.03	13.62	1.68	
NP	13	18.84	14.23	1.01	1.59
NJ	5	7.25	13.40	1.14	
TJ	23	33.33	12.70	2.14	
TP	36	52.17	13.89	1.47	
FP	6	8.70	13.33	1.86	2.98*
FJ	4	5.80	14.75	.50	
IN	6	8.70	14.17	.98	
EN	12	17.39	13.92	1.16	
IS	29	42.03	13.10	2.01	.97
ES	27	39.63	13.59	1.94	
ET	28	40.58	13.61	1.73	
EF	6	8.70	13.67	1.60	
IF	4	5.80	13.50	1.73	.48
IT	31	44.93	13.26	1.95	
S dom	18	26.08	12.72	2.27	
N dom	11	15.94	13.82	1.08	
T dom	34	49.28	13.74	1.71	1.52
F dom	6	8.70	13.83	1.47	

* N = 69

■ = 1 person

Table F-11: MBTI Means Comparison with Community Service

ISTJ N = 8 % = 11.59 ■■■■■■■■ Mean 5.38 SD .74 Rank 13	ISFJ N = 1 % = 1.45 ■ Mean 7.00 SD . Rank 1.5	INFJ N = 0 % = 0.00 Mean . SD . Rank .	INTJ N = 2 % = 2.90 ■■ Mean 6.00 SD 0.00 Rank 7.5
ISTP N = 17 % = 24.64 ■■■■■■■■■■■ ■■■■■■ Mean 5365 SD .86 Rank 11	ISFP N = 3 % = 4.35 ■■■ Mean 5.67 SD .58 Rank 10	INFP N = 0 % = 0.00 Mean . SD . Rank .	INTP N = 4 % = 5.80 ■■■■ Mean 6.25 SD 1.50 Rank 5
ESTP N = 7 % = 10.15 ■■■■■■■ Mean 6.43 SD .79 Rank 3	ESFP N = 2 % = 2.90 ■■ Mean 5.00 SD 1.14 Rank 14	ENFP N = 1 % = 1.45 ■ Mean 5.50 SD .71 Rank 12	ENTP N = 8 % = 11.59 ■■■■■■■■ Mean 6.25 SD .89 Rank 5
ESTJ N = 12 % = 17.39 ■■■■■■■■■■ ■■ Mean 5.83 SD 1.11 Rank 9	ESFJ N = 1 % = 1.45 ■ Mean 7.00 SD . Rank 1.5	ENFJ N = 2 % = 2.90 ■■ Mean 6.25 SD .89 Rank 5	ENTJ N= 1 % = 1.45 ■ Mean 6.00 SD . Rank 7.5

	N	%	Mean	SD	t or f
E	34	49.28	6.06	.98	1.52
I	35	50.72	5.74	.89	
S	51	73.91	5.78	.94	-1.48
N	18	26.08	6.17	.92	
T	59	85.51	5.88	.95	-0.06
F	10	14.49	5.90	.99	
J	27	39.13	5.78	.93	- .74
P	42	60.87	5.95	.96	
IJ	11	15.94	5.64	.81	1.18*
IP	24	36.23	5.75	.94	
EP	18	26.08	6.22	.94	
EJ	16	23.19	5.88	1.02	
ST	44	63.77	5.77	.94	.77
SF	7	10.15	5.86	1.07	
NF	3	4.35	6.00	1.00	
NT	15	21.74	6.20	.94	
SJ	22	31.88	5.77	1.02	1.07
SP	29	42.03	5.79	.90	
NP	13	18.84	6.31	1.03	
NJ	5	7.25	5.80	.45	
TJ	23	33.33	5.70	.93	.78
TP	36	52.17	6.00	.96	
FP	6	8.70	5.67	1.03	
FJ	4	5.80	6.25	.96	
IN	6	8.70	6.17	1.17	1.42
EN	12	17.39	6.17	.83	
IS	29	42.03	5.62	.82	
ES	22	31.88	6.00	1.07	
ET	28	40.58	6.11	.96	1.04
EF	6	8.70	5.83	1.17	
IF	4	5.80	6.00	.82	
IT	31	44.93	5.67	.91	
S dom	18	26.08	5.83	.99	.73
N dom	11	15.94	6.27	.79	
T dom	34	49.28	5.79	1.01	
F dom	6	8.70	5.83	.75	

* N = 69

■ = 1 person

APPENDIX G

Table G-1: University of Florida Male Freshmen*

ISTJ N = 110 % = 7.63 ■■■■■■■■	ISFJ N = 81 % = 5.62 ■■■■■■	INFJ N = 65 % = 4.51 ■■■■■	INTJ N = 82 % = 5.69 ■■■■■■
ISTP N = 58 % = 4.02 ■■■■	ISFP N = 77 % = 5.34 ■■■■■	INFP N = 157 % = 10.90 ■■■■■■■■■■ ■	INTP N = 88 % = 6.11 ■■■■■■
ESTP N = 38 % = 2.64 ■■■	ESFP N = 84 % = 5.83 ■■■■■■	ENFP N = 175 % = 12.14 ■■■■■■■■■■ ■■	ENTP N = 74 % = 5.14 ■■■■■
ESTJ N = 103 % = 7.15 ■■■■■■■	ESFJ N = 95 % = 6.59 ■■■■■■■	ENFJ N = 83 % = 5.76 ■■■■■■	ENTJ N = 71 % = 4.93 ■■■■■

	N#	%
E	723	50.17
I	718	49.83
S	646	44.83
N	795	55.17
T	624	43.30
F	817	56.70
J	690	47.88
P	751	52.12
IJ	338	23.46
IP	380	26.37
EP	371	25.75
EJ	352	24.43
ST	309	21.44
SF	337	23.39
NF	480	33.31
NT	315	21.86
SJ	389	27.00
SP	257	17.83
NP	494	34.28
NJ	301	20.89
TJ	366	25.40
TP	258	17.90
FP	493	34.21
FJ	324	22.48
IN	392	27.20
EN	403	27.97
IS	326	22.62
ES	320	22.21
ET	286	19.85
EF	437	30.33
IF	380	26.37
IT	338	23.46
S dom	313	21.72
N dom	396	27.48
T dom	320	22.21
F dom	412	25.59

* Based on data collected in 1971.

N = 1441　　■ = 1% of sample

These data are used with permission and were cited in:

McCauley, M. H. (1973). Myers-Briggs Type Indicator Applications (Report of Committee #13, University of Florida counseling study). Gainesville, FL: University of Florida, Department of Clinical Psychology.

Table G-2: Composite Sample of Male Traditional-Age College Students*

ISTJ N = 1577 % = 12.48 ■■■■■■■■■■ ■■	ISFJ N = 687 % = 5.44 ■■■■■	INFJ N = 335 % = 2.65 ■■■	INTJ N = 683 % = 5.40 ■■■■■
ISTP N = 860 % = 6.81 ■■■■■■	ISFP N = 517 % = 4.09 ■■■■	INFP N = 672 % = 5.32 ■■■■■ ■	INTP N = 838 % = 6.63 ■■■■■■■
ESTP N = 849 % = 6.72 ■■■■■■■	ESFP N = 557 % = 4.41 ■■■■	ENFP N = 791 % = 6.26 ■■■■■■	ENTP N = 855 % = 6.77 ■■■■■■■
ESTJ N = 1619 % = 12.81 ■■■■■■■■■■ ■■■	ESFJ N = 690 % = 5.46 ■■■■■	ENFJ N = 377 % = 2.98 ■■■	ENTJ N = 730 % = 5.78 ■■■■■■

	N#	%
E	6468	51.18
I	6169	48.82
S	7356	58.21
N	5281	41.79
T	8011	63.39
F	4626	36.61
J	6698	53.00
P	5939	47.00
IJ	3282	25.97
IP	2887	22.85
EP	3052	24.15
EJ	3416	27.03
ST	4905	38.81
SF	2451	19.40
NF	2175	17.21
NT	3106	24.58
SJ	4573	36.19
SP	2783	22.02
NP	3156	24.97
NJ	2125	16.82
TJ	4609	36.47
TP	3402	26.92
FP	2537	20.08
FJ	2089	16.53
IN	2528	20.00
EN	2753	21.79
IS	3641	28.81
ES	3715	29.40
ET	4053	32.07
EF	2415	19.11
IF	2211	17.50
IT	3958	31.32
S dom	3670	29.04
N dom	2664	21.08
T dom	4047	32.31
F dom	2256	17.85

* Based on data collected between 1971 and 1982.

# N = 12,637 ■ = 1% of sample

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BIOGRAPHICAL SKETCH

Sandra (Ruegg) Chesborough was born in Bessemer, Michigan to Dena and Russell Ruegg. After graduation from John Marshall Senior High School in Rochester, Minnesota she attended two Minnesota colleges, Winona State and later Mankato State University where she completed a B.S. degree in Elementary Education.

After a brief teaching career she became interested in social work and worked in various social service settings involving children and youth before returning to college to pursue a masters degree in social work from the University of Minnesota. Until her return to school in 1989 she worked in several social work positions in mental health, medical and educational settings in Florida.

Sandra has two daughters, Andrea and Amber Chesborough. Andrea attended school and graduated during the time that her mother attended the University of Florida. Amber currently is a student in the International Baccalaureate program at Eastside High School in Gainesville, Florida.

Sandra was accepted into candidacy in the Educational Leadership program in December 1991. In May 1992 she accepted a part-time position as a clinical social worker with Children's Home Society.

Using her dual career experience in both education and social work, Sandra's long range career goal is to develop a model student retention program that integrates personal, social and academic resources within communities so that students, parents, businesses and social groups are able to work together to address the needs of students at all levels of education from preschool to college.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy.

James L. Wattenbarger

James L. Wattenbarger, Chairman
Distinguished Service Professor
of Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy.

David Honeyman

David S. Honeyman, Jr.
Associate Professor of Educational
Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy.

Walter A Busby

Walter A. Busby
Associate Professor of Foundations
of Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and in quality, as a dissertation for the degree of Doctor of Philosophy.

Mary H. McCaulley

Mary H. McCaulley
Assistant Professor Emeritus of
Clinical and Health Psychology

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 1993

David C. Smith

Dean, College of Education

Dean, Graduate School